TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID: 2ABFV-CCKID1

Product: ClicClock

Model No.: Q50

Additional Model No.: ClicClock

Trade Mark: N/A

Report No.: TCT170406E011

Issued Date: Apr. 25, 2017

Issued for:

PC Smart S.A.

Carrera 116 no.15-25 Bogota, Colombia

Issued By:

Shenzhen Tongce Testing Lab.

1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

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1. Test Certification

Product:	ClicClock
Model No.:	Q50
Additional Model No.:	ClicClock
Applicant:	PC Smart S.A.
Address:	Carrera 116 no.15-25 Bogota, Colombia
Manufacturer:	PC Smart S.A.
Address:	Carrera 116 no.15-25 Bogota, Colombia
Date of Test:	Apr. 07, 2017 – Apr. 24, 2017
Applicable Standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 Subpart H FCC CFR Title 47 Part24 Subpart E

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:	Garen	***Date:***	***Apr. 24, 2017***
Reviewed By:	Joe Zhou	***Date:***	***Apr. 25, 2017***
Approved By:	Tomsin	***Date:***	***Apr. 25, 2017***

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2. Test Result Summary

Requirement	CFR 47 Section	Result
Conducted Output Power	§2.1046	PASS
Peak-to-Average Ratio	§24.232(d)	PASS
Effective Radiated Power	§22.913(a)(2)	PASS
Equivalent Isotropic Radiated Power	§24.232(c)	PASS
Occupied Bandwidth	§2.1049 §22.917(b) §24.238(b)	PASS
Band Edge	§2.1051 §22.917(a) §24.238(a)	PASS
Conducted Spurious Emission	§2.1051 §22.917(a) §24.238(a)	PASS
Field Strength of Spurious Radiation	§2.1053 §22.917(a) §24.238(a)	PASS
Frequency Stability for Temperature & Voltage	§2.1055 §22.355 §24.235	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

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3. EUT Description

Product Name:	ClicClock
Model :	Q50
Additional Model:	ClicClock
Trade Mark:	**N/A**
Hardware Version:	G36SMB-V1.4
Software Version:	G36S
Tx Frequency:	GSM/GPRS 850: 824.2 MHz ~ 848.8 MHz GSM/GPRS 1900: 1850.2 MHz ~ 1909.8MHz
Rx Frequency:	GSM/GPRS 850: 869.2 MHz ~ 893.8 MHz GSM/GPRS 1900: 1930.2 MHz ~ 1989.8 MHz
99% Occupied Bandwidth:	GSM/GPRS 850 Class 12: 245KGXW GSM/GPRS 1900 Class 12: 244KGXW
Type of Modulation:	GSM/GPRS: GMSK
Antenna Type:	Internal Antenna
Antenna Gain:	GSM/GPRS 850: 0.05dBi GSM/GPRS 1900: 0.55dBi
Power Supply:	DC 3.7V from rechargeable lithium battery
Model difference：	All models above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.

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4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Operation mode:	Keep the EUT in communication with CMU200 and select channel with modulation
Remark: This product has a built-in rechargeable battery, so in an independent test, the EUT battery was fully-charged.	
The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

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Description Operation Frequency

GSM 850		PCS1900	
Channel:	Frequency (MHz)	Channel:	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
….	….	….	….
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
…	…	…	…
250	848.60	809	1909.60
251	848.80	810	1909.80

4.2. Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power. Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.
Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10000 MHz for GSM850.
2. 30 MHz to 20000 MHz for PCS1900.

All modes and data rates and positions were investigated.
Test modes are chosen to be reported as the worst case configuration below:

Test Mode		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	GPRS class 12 Link	GPRS class 12 Link
PCS 1900	GPRS class 12 Link	GPRS class 12 Link

Note: *The maximum power levels are chosen to test as the worst case configuration as follows: GPRS multi-slot class 12 mode for GMSK modulation, EDGE multi-slot class 12 mode for 8PSK modulation. RMC 12.2Kbps mode for WCDMA band V and WCDMA band II, only these modes were used for all tests. In addition to above worst-case test, below investigating on all data rates and all modes are compliance with each FCC test case which has specific test limits. For spurious emissions at antenna port, the EUT was investigated the band edges on low and high channels, and the unwanted spurious emissions on middle channel for all modes, the results are PASS, then only the worst-results were reported in the test report. The Radiated Spurious emissions for GPRS and EDGE modes were investigated on the middle channel and the PASSed results were not worst than those data tested from the highest power channels.*

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4.3. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	AKN1G	/	/	DELO

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

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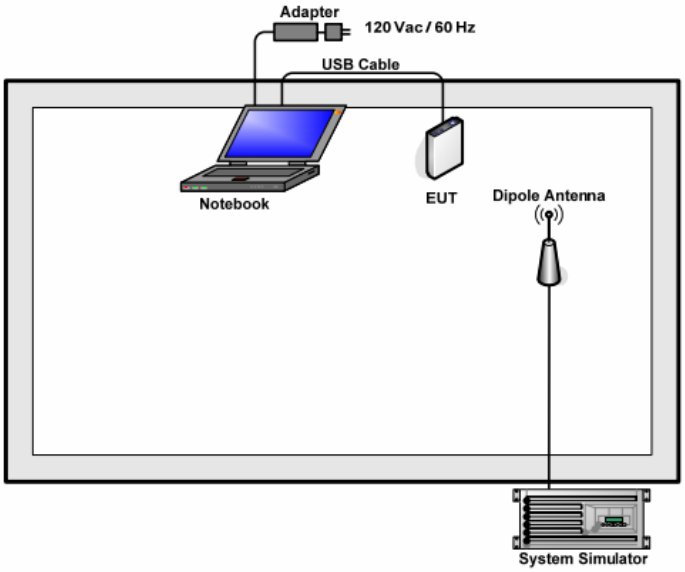
4.4. Configuration of Tested System



4.5. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level. The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 3 dB and a 5dB attenuator.

Example: *Offset(dB) = RF cable loss(dB) + attenuator factor(dB).*

= 8(dB)

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5. Facilities and Accreditations

5.1. Facilities

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

- FCC - Registration No.: 572331

  Shenzhen Tongce Testing Lab

  The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- CNAS - Registration No.: CNAS L6165

  Shenzhen TCT Testing Technology Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6165.

5.2. Location

Shenzhen Tongce Testing Lab
Address: 1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China
Tel: 86-755-36638142

5.3. Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

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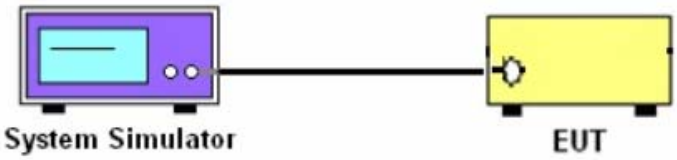
6. Test Results and Measurement Data

6.1. Conducted Output Power Measurement

6.1.1. Test Specification

Test Requirement:	FCC part 22.913(a) and FCC part 24.232(b)
Test Method:	FCC part 2.1046
Operation mode:	Refer to item 4.1
Limits:	GSM 850 7W PCS 1900 2W
Test Setup:	
Test Procedure:	1. The transmitter output port was connected to the system simulator. 2. Set EUT at maximum power through system simulator. 3. Select lowest, middle, and highest channels for each band and different modulation. 4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.
Test Result:	PASS

6.1.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Aug. 11, 2017
RF cable (9kHz-40GHz)	TCT	RE-06	N/A	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	N/A	Aug. 12, 2017

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.1.3. Test data

Band: GSM 850	Measured Average Power (dBm)		
Channel	128	190	251
Frequency	824.2	836.6	848.8
GSM (GMSK, Voice)	32.57	32.65	32.69
GPRS (GMSK, 1-slot)	31.70	31.65	31.69
GPRS (GMSK, 2-slot)	30.57	30.72	30.73
GPRS (GMSK, 3-slot)	28.61	28.73	28.85
GPRS (GMSK, 4-slot)	27.45	27.64	27.82
Band: 1900	Measured Average Power (dBm)		
Channel	512	661	810
Frequency	1850.2	1880.0	1909.8
GSM (GMSK, Voice)	29.23	29.28	29.52
GPRS (GMSK, 1-slot)	28.25	28.28	28.52
GPRS (GMSK, 2-slot)	27.19	27.3	27.19
GPRS (GMSK, 3-slot)	26.71	26.52	26.53
GPRS (GMSK, 4-slot)	25.57	25.68	25.71

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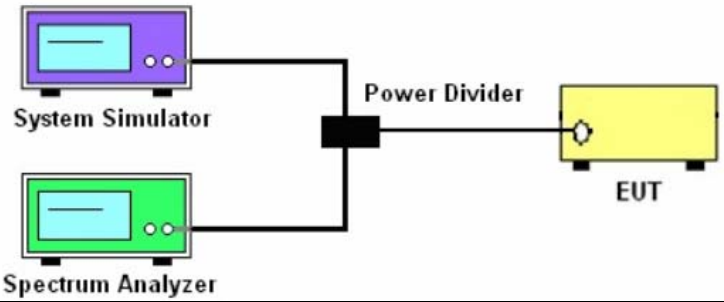
6.2. Peak to Average Ratio

6.2.1. Test Specification

Test Requirement:	FCC Part24.232
Test Method:	FCC KDB 971168 v02r02 Section 5.7.1
Operation mode:	Refer to item 4.1
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1. 2. The EUT was connected to spectrum analyzer and system simulator via a power divider. 3. Set EUT to transmit at maximum output power. 4. For GSM/EGPRS operating modes, signal gating is implemented on the spectrum analyzer by triggering from the system simulator. 5. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.
Test Result:	PASS

6.2.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
RF cable (9kHz-40GHz)	TCT	RE-06	N/A	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	N/A	Aug. 12, 2017

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.2.3. Test Data

Cellular Band						
Mode	**GSM 850**			**GSM 1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	2.67	2.66	2.67	2.72	2.72	2.72

Test plots as follows:

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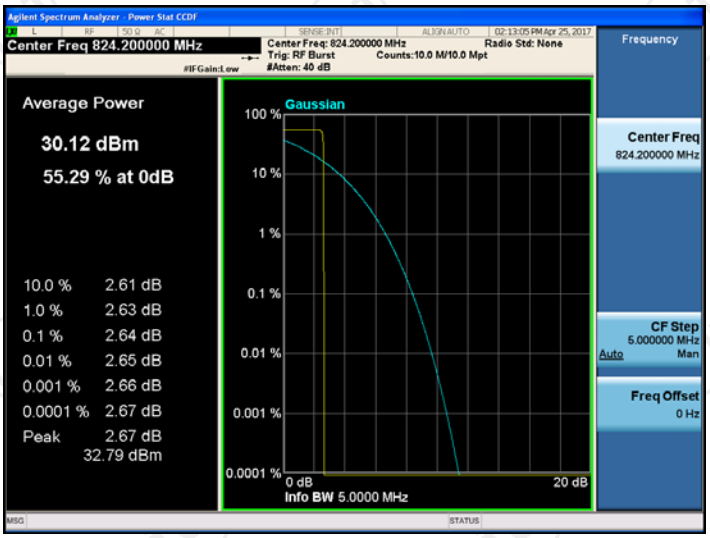
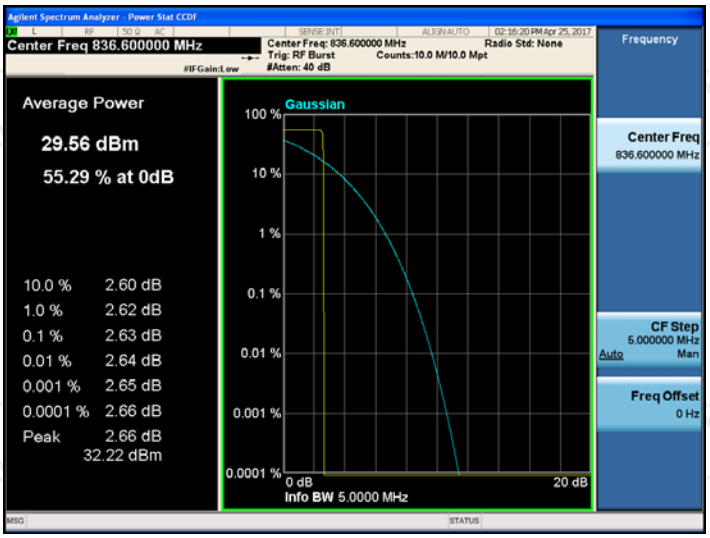
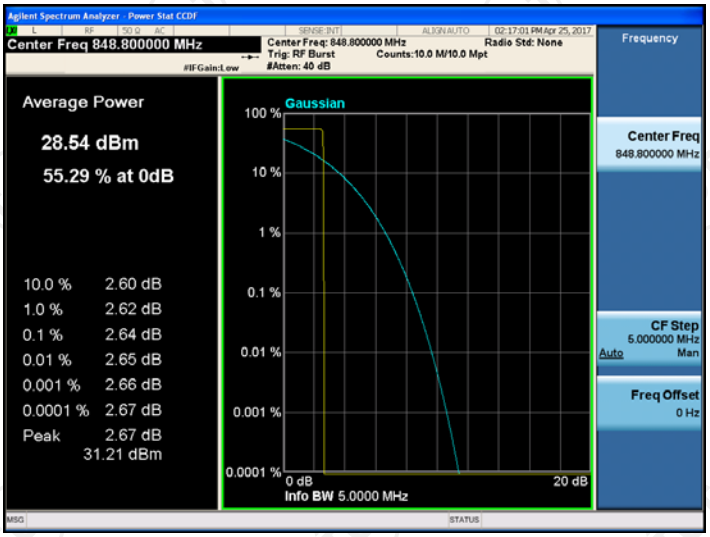
Peak-to-Average Ratio on Channel 128



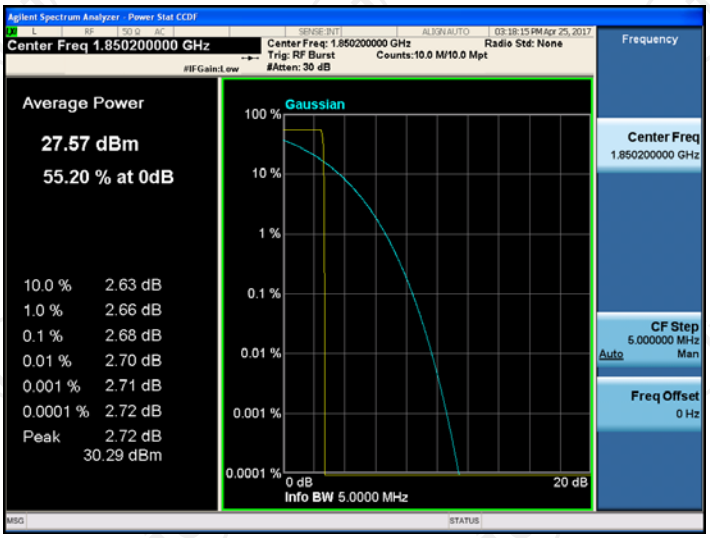
Peak-to-Average Ratio on Channel 190



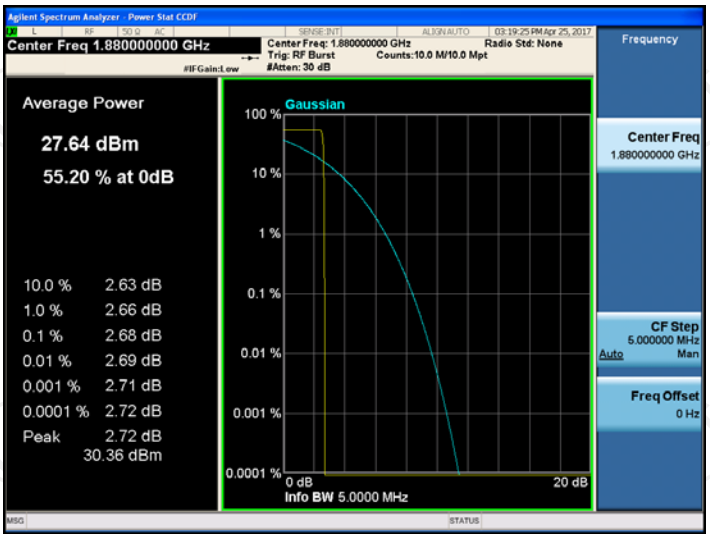
Peak-to-Average Ratio on Channel 251



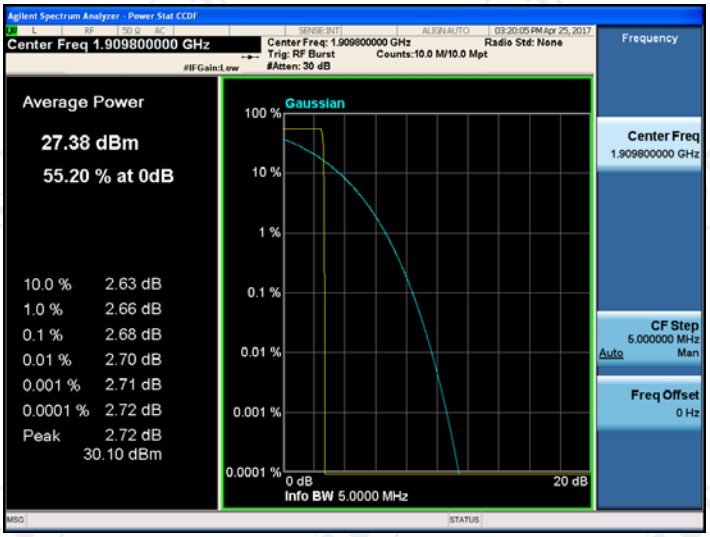
Peak-to-Average Ratio on Channel 512



Peak-to-Average Ratio on Channel 661

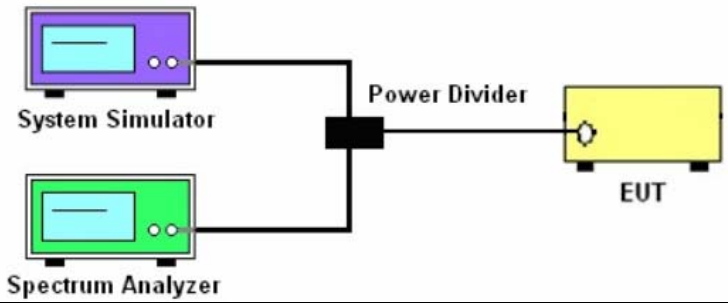


Peak-to-Average Ratio on Channel 810



6.3. 99% Occupied Bandwidth and 26dB Bandwidth Measurement

6.3.1. Test Specification

Test Requirement:	FCC part 22.913(a) and FCC part 24.232(b)
Test Method:	FCC part 2.1049
Operation mode:	Refer to item 4.1
Limit:	N/A
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 4.2. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold. 5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.
Test Result:	PASS

6.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
RF cable (9kHz-40GHz)	TCT	RE-06	N/A	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	N/A	Aug. 12, 2017

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.3.3. Test data

Cellular Band						
Mode	**GSM850**			**GSM1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880.0**	**1909.8**
99% OBW (kHz)	239.36	245.07	242.36	242.24	243.88	244.13
26dB BW (kHz)	312.2	322.9	317.2	321.3	314.5	322.2

Note: GSM & GPRS use the same modulation technical (GMSK), and with the same channels, so the 99% OBW and the -26dB of GPRS not performed.

Test plots as follows:

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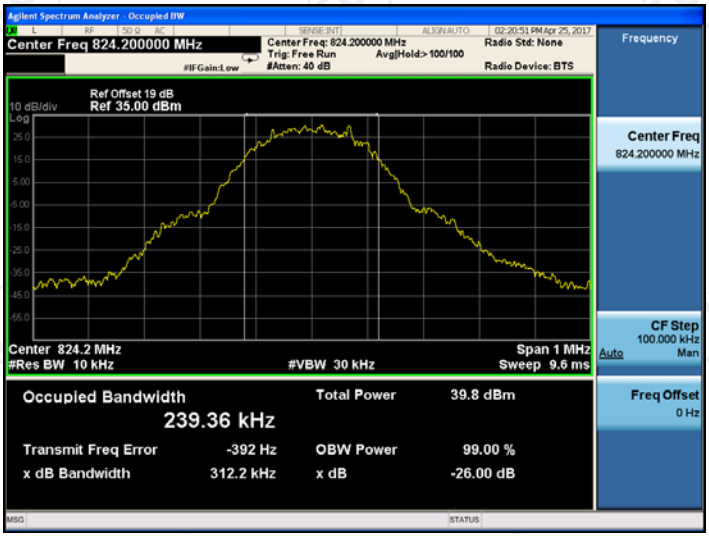
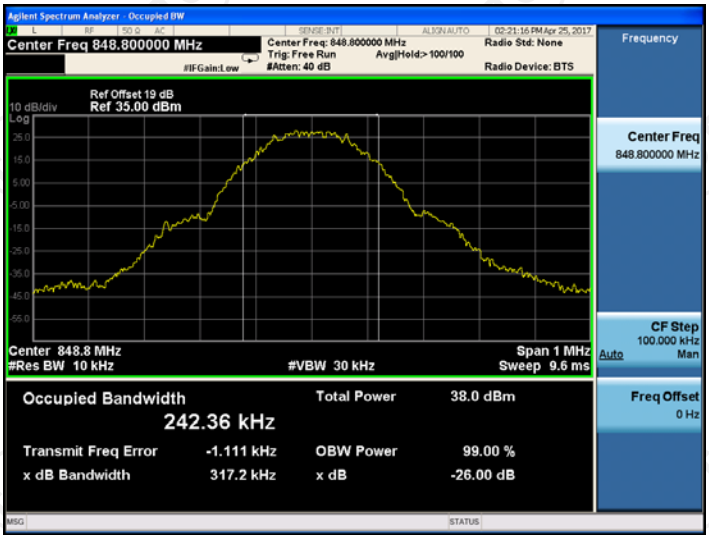
Band:	GSM850	Test Mode:	GSM850 (GMSK)

26dB bandwidth & 99%Occupied Bandwidth Plot on Channel 128



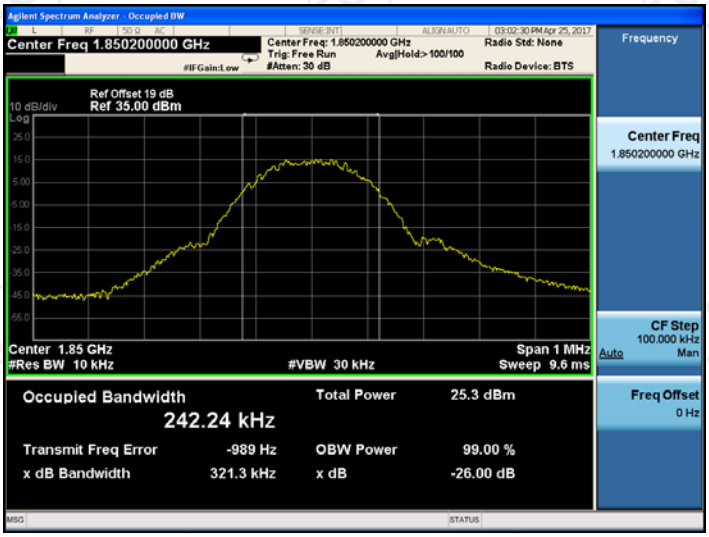
26dB bandwidth & 99%Occupied Bandwidth Plot on Channel 190

26dB bandwidth & 99% Occupied Bandwidth Plot on Channel 251



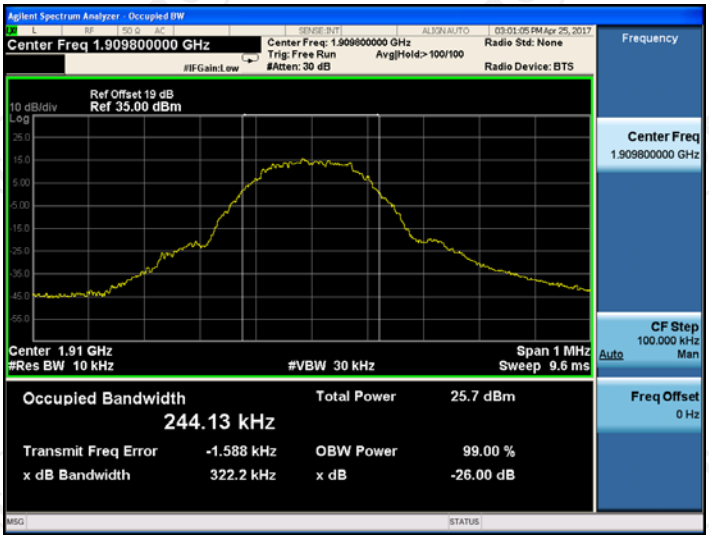
Band:	GSM 1900	Test Mode:	GSM 1900 (GMSK)

26dB bandwidth & 99%Occupied Bandwidth Plot on Channel 512



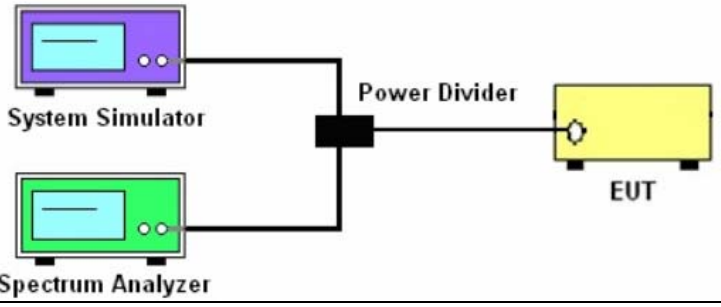
26dB bandwidth & 99%Occupied Bandwidth Plot on Channel 661

26dB bandwidth & 99% Occupied Bandwidth Plot on Channel 810



6.4. Band Edge and Conducted Spurious Emission Measurement

6.5. Test Specification

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Operation mode:	Refer to item 4.1
Limit:	-13dBm
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 6.0. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The band edges of low and high channels for the highest RF powers were measured. 5. The conducted spurious emission for the whole frequency range was taken. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
Test Result:	PASS

6.5.1. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
RF cable (9kHz-40GHz)	TCT	RE-06	N/A	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	N/A	Aug. 12, 2017

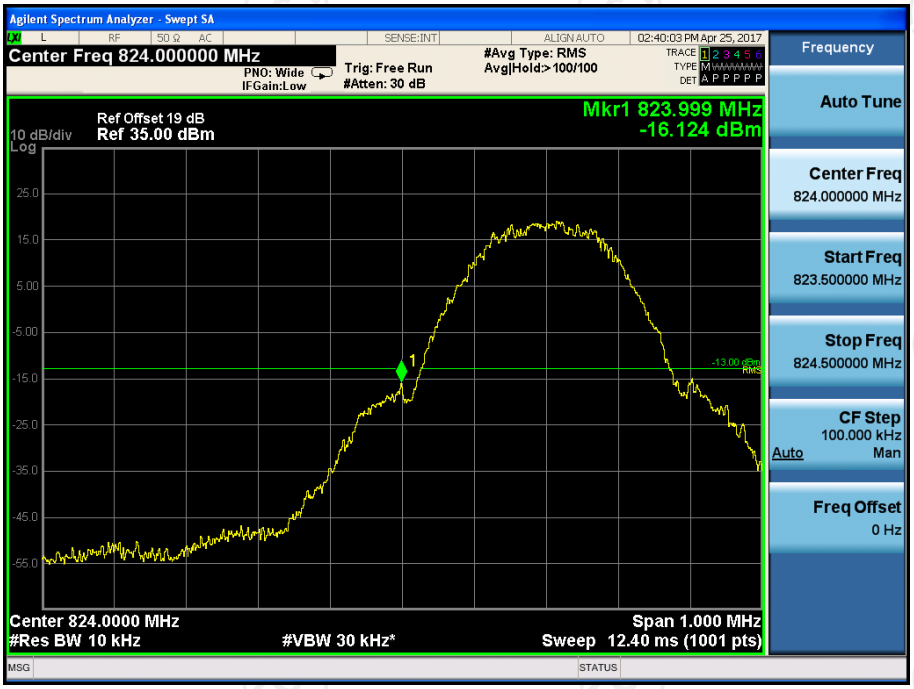
Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.5.2. Test data

Test plots as follows:

Band:	GSM 850	Test Mode:	GSM 850 (GMSK)

Lower Band Edge Plot on Channel 128



Higher Band Edge Plot on Channel 251

Band:	GSM 1900	Test Mode:	GSM 1900 (GMSK)

Lower Band Edge Plot on Channel 512

Higher Band Edge Plot on Channel 810

Band:	GSM 850	Test Mode:	GSM 850 (GMSK)

Conducted Spurious Emission on Channel 128

Conducted Spurious Emission on Channel 190

Conducted Spurious Emission on Channel 251

Band:	GSM 1900	Test Mode:	GSM1900 (GMSK)

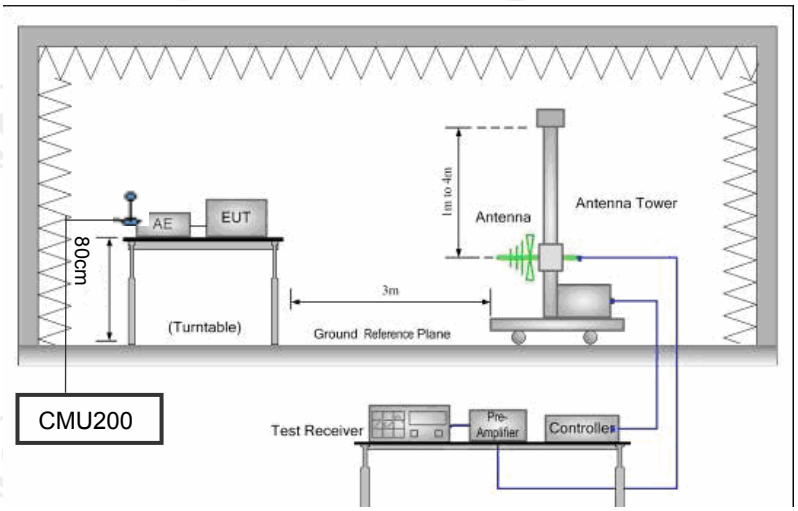
Conducted Spurious Emission on Channel 512

Conducted Spurious Emission on Channel 661

Conducted Spurious Emission on Channel 810

6.6. Effective Radiated Power and Effective Isotropic Radiated Power Measurement

6.6.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC part 22.913(a) and FCC part 24.232(b)</td></tr>
<tr><td>Test Method:</td><td>FCC part 2.1046</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td></td><td>GSM/GPRS/EDGE</td><td>WCDMA/HSPA</td></tr>
<tr><td>SPAN</td><td>500kHz</td><td>10MHz</td></tr>
<tr><td>RBW</td><td>10kHz</td><td>100kHz</td></tr>
<tr><td>VBW</td><td>30kHz</td><td>300kHz</td></tr>
<tr><td>Detector</td><td>RMS</td><td>RMS</td></tr>
<tr><td>Trace</td><td>Average</td><td>Average</td></tr>
<tr><td>Average Type</td><td>Power</td><td>Power</td></tr>
<tr><td>Sweep Count</td><td>100</td><td>100</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>GSM850 7W ERP
PCS1900 2W EIRP</td></tr>
<tr><td>Test Setup：</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>1. The testing follows FCC KDB 971168 v02r02 Section 5.2.1. (for CDMA/WCDMA), Section 5.2.2.2 (for GSM/GPRS/EDGE) and ANSI / TIA-603-C-2004 Section 2.2.17.
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at</td></tr>
</table>

	maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. 4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at the same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15 .
Test results:	PASS

6.6.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Aug. 11, 2017
System simulator	R&S	CMU200	111382	Aug. 11, 2017
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Aug. 11, 2017
Pre-amplifier	HP	8447D	2727A05017	Aug. 11, 2017
Broadband Antenna	Schwarzbeck	VULB9163	340	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Aug. 13, 2017
Broadband Antenna	Schwarzbeck	VULB9163	412	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9120D	813	Aug. 13, 2017
Dipole Antenna	TCT	TCT-RF	N/A	Aug. 13, 2017
Coax cable (9kHz-40GHz)	TCT	RE-low-01	N/A	Aug. 11, 2017
Coax cable (9kHz-40GHz)	TCT	RE-high-02	N/A	Aug. 11, 2017
Coax cable (9kHz-40GHz)	TCT	RE-low-03	N/A	Aug. 11, 2017
Coax cable (9kHz-40GHz)	TCT	RE-High-04	N/A	Aug. 11, 2017
Antenna Mast	CCS	CC-A-4M	N/A	Aug. 12, 2017
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A
UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	R&S	Sep. 12, 2016	Sep. 11, 2017

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.6.3. Test Data

Measurement Data (worst case):

Test Result of ERP

GSM 850 Radiated Power ERP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.40	H	9.41	21.66	31.07	1.28
836.60	H	9.48	21.54	31.02	1.26
848.80	H	9.69	21.46	31.15	1.30
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.40	H	10.52	21.66	32.18	1.65
836.60	H	10.63	21.54	32.17	1.65
848.80	H	10.70	21.46	32.16	1.64

GPRS 850 (1-solt) Radiated Power ERP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.40	H	8.15	22.42	30.57	1.14
836.60	H	8.54	22.65	31.19	1.32
848.80	H	8.47	22.26	30.73	1.18
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
824.40	H	9.06	21.66	30.72	1.18
836.60	H	9.80	21.54	31.34	1.36
848.80	H	9.31	21.46	30.77	1.19

***Note**: All GPRS slot have been tested, but only the worst GPRS 1-slot show in this test item.*

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Test Result of EIRP

PCS1900 Radiated Power EIRP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	H	7.90	21.54	29.44	0.88
1880.00	H	7.12	21.48	28.60	0.72
1909.80	H	7.01	21.62	28.63	0.73
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	H	8.41	22.74	31.15	1.30
1880.00	H	8.42	22.62	31.04	1.27
1909.80	H	8.19	22.56	30.75	1.19

GPRS1900(1-solt) Radiated Power EIRP					
Horizontal Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	H	6.85	21.54	28.39	0.69
1880.00	H	6.31	21.48	27.79	0.60
1909.80	H	6.42	21.62	28.04	0.64
Vertical Polarization (Antenna Pol.)					
Frequency (MHz)	**(EUT Pol.)**	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	H	7.92	22.74	30.66	1.16
1880.00	H	7.06	22.62	29.68	0.93
1909.80	H	7.15	22.56	29.71	0.94

***Note**: All GPRS slot have been tested, but only the worst GPRS 1-slot show in this test item.*

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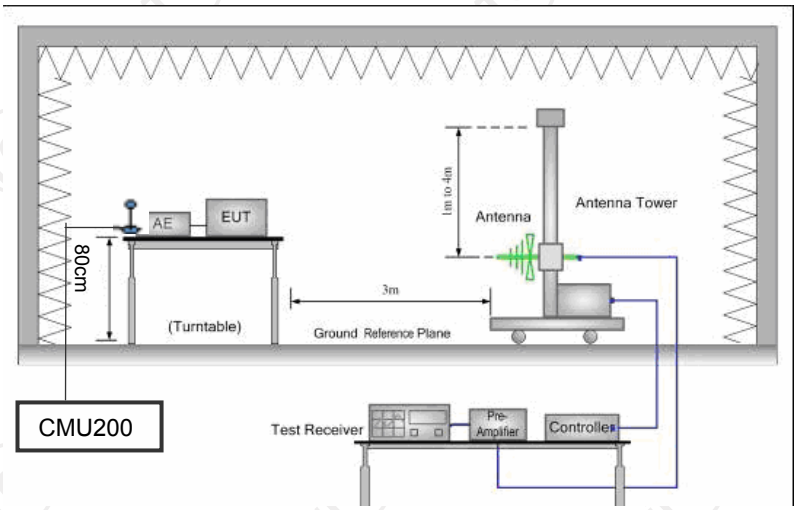
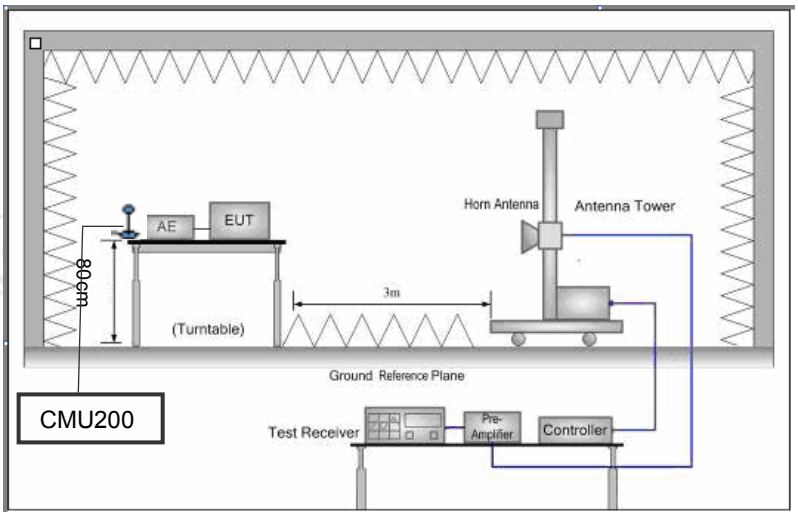
6.7. Field Strength of Spurious Radiation Measurement

6.7.1. Test Specification

Test Requirement:	FCC part 22.917(a) and FCC part 24.238(a)
Test Method:	FCC part 2.1053 and FCC part 2.1057
Operation mode:	Refer to item 4.1
Limit:	-13dBm
Test setup:	For 30MHz~1GHz  Above 1GHz 
Test Procedure:	1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12. 2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground. 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower. 4. The table was rotated 360 degrees to determine the position of the highest spurious emission.

	5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations. 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission. 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission. 9. Taking the record of output power at antenna port. 10. Repeat step 7 to step 8 for another polarization. 11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain 12. ERP (dBm) = EIRP - 2.15 13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
Test results:	PASS
Remark:	All modulations have been tested, but only the worst modulation show in this test item. Worst case at GSM850/PCS1900

6.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
ESPI Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Aug. 11, 2017
System simulator	R&S	CMU200	111382	Aug. 11, 2017
Spectrum Analyzer	ROHDE&SCHWARZ	FSEM	848597/001	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Aug. 11, 2017
Pre-amplifier	HP	8447D	2727A05017	Aug. 11, 2017
Loop antenna	ZHINAN	ZN30900A	12024	Aug. 13, 2017
Broadband Antenna	Schwarzbeck	VULB9163	340	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9170	373	Aug. 13, 2017
Dipole Antenna	TCT	TCT-RF	N/A	Aug. 13, 2017
Coax cable (9kHz-40GHz)	TCT	RE-low-01	N/A	Aug. 11, 2017
Coax cable (9kHz-40GHz)	TCT	RE-high-02	N/A	Aug. 11, 2017
Coax cable (9kHz-40GHz)	TCT	RE-low-03	N/A	Aug. 11, 2017
Coax cable (9kHz-40GHz)	TCT	RE-High-04	N/A	Aug. 11, 2017
Antenna Mast	CCS	CC-A-4M	N/A	Aug. 12, 2017
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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6.7.3. Test Data

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: *1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor*

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

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Band	GSM 850		Test channel:	Lowest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-42.72	-13.00	PASS
2472.60	V	-39.36		
3296.80	V	-51.81		
1648.40	Horizontal	-42.63		
2472.60	H	-38.44		
3296.80	H	-51.99		
Band	**GSM 850**		**Test channel:**	**Middle**
Test mode:			**Temperature :**	**25°C**
			Relative Humidity:	**56%**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-41.68	-13.00	PASS
2509.80	V	-44.77		
3346.40	V	-52.48		
1673.20	Horizontal	-41.67		
2509.80	H	-39.83		
3346.40	H	-52.23		
Band	**GSM 850**		**Test channel:**	**Highest**
Test mode:			**Temperature :**	**25°C**
			Relative Humidity:	**56%**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-42.65	-13.00	PASS
2546.40	V	-46.87		
3395.20	V	-52.43		
1697.60	Horizontal	-43.63		
2546.40	H	-46.63		
3395.20	H	-56.84		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of not record in the report are very lower than the limit and not show in test report.
3. Test Frequency range is up to 10GHz,

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Band	PCS 1900		Test channel:	Lowest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-49.63	-13.00	PASS
5550.60	V	-47.35		
7400.80	V	-52.99		
3700.40	Horizontal	-49.82		
5550.60	H	-50.81		
7400.80	H	-52.53		
Test mode:	PCS 1900		Test channel:	Middle
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-49.52	-13.00	PASS
5640.00	V	-53.48		
7520.00	V	-45.83		
3760.00	Horizontal	-47.18		
5640.00	H	-53.23		
7520.00	H	-53.41		
Test mode:	PCS 1900		Test channel:	Highest
Test mode:			Temperature :	25°C
			Relative Humidity:	56%
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-52.79	-13.00	PASS
5729.40	V	-54.82		
7639.20	V	-58.65		
3819.60	Horizontal	-52.65		
5729.40	H	-55.96		
7639.20	H	-56.26		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of not record in the report are very lower than the limit and not show in test report.
3. Test Frequency range is up to 20GHz,

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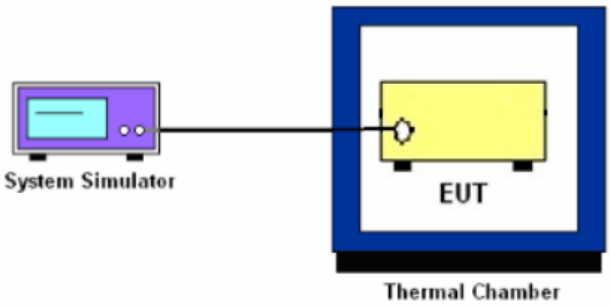
6.8. Frequency Stability Measurement

6.8.1. Test Specification

Test Requirement:	FCC Part 2.1055(a)(1)(b)
Test Method:	FCC Part 2.1055(a)(1)(b)
Operation mode:	Refer to item 4.1
Limit:	±2.5 ppm
Test Setup:	
Test Procedure:	**Test Procedures for Temperature Variation** 1. The testing follows FCC KDB 971168 v02r02 Section 9.0. 2. The EUT was set up in the thermal chamber and connected with the system simulator. 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute. 4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute. **Test Procedures for Voltage Variation** 1. The testing follows FCC KDB 971168 v02r02 Section 9.0. 2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator. 3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT. 4. The variation in frequency was measured for the worst case.
Test Result:	PASS
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.

6.8.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
System simulator	R&S	CMU200	111382	Aug. 11, 2017
RF cable (9kHz-40GHz)	TCT	RE-06	N/A	Aug. 12, 2017
Antenna Connector	TCT	RFC-01	N/A	Aug. 12, 2017

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

6.8.3. Test Data

Test Result of Temperature Variation

Band :	GSM 850	Channel:	190
Limit (ppm) :	2.5	Frequency:	836.6MHz

Temperature (°C)	Deviation (ppm)	Result
50	0.010	PASS
40	0.013	
30	0.011	
20	0.009	
10	0.010	
0	0.012	
-10	0.008	
-20	0.012	
-30	0.009	

Band :	GSM 1900	Channel:	661
Limit (ppm) :	*Note*	Frequency:	1880MHz

Temperature (°C)	Deviation (ppm)	Result
50	0.022	PASS
40	0.021	
30	0.019	
20	0.018	
10	0.017	
0	0.016	
-10	0.017	
-20	0.020	
-30	0.018	

Note: *The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.*

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Test Result of Voltage Variation

Band & Channel	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH190	4.2	0.026	2.5	PASS
	3.7	0.023		
	BEP	0.019		
GSM 1900 CH661	4.2	0.012	(Note 3.)	
	3.7	0.009		
	BEP	0.007		

Note:

1. Normal Voltage = 3.7V.
2. Battery End Point (BEP) = 3.5V.
3. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

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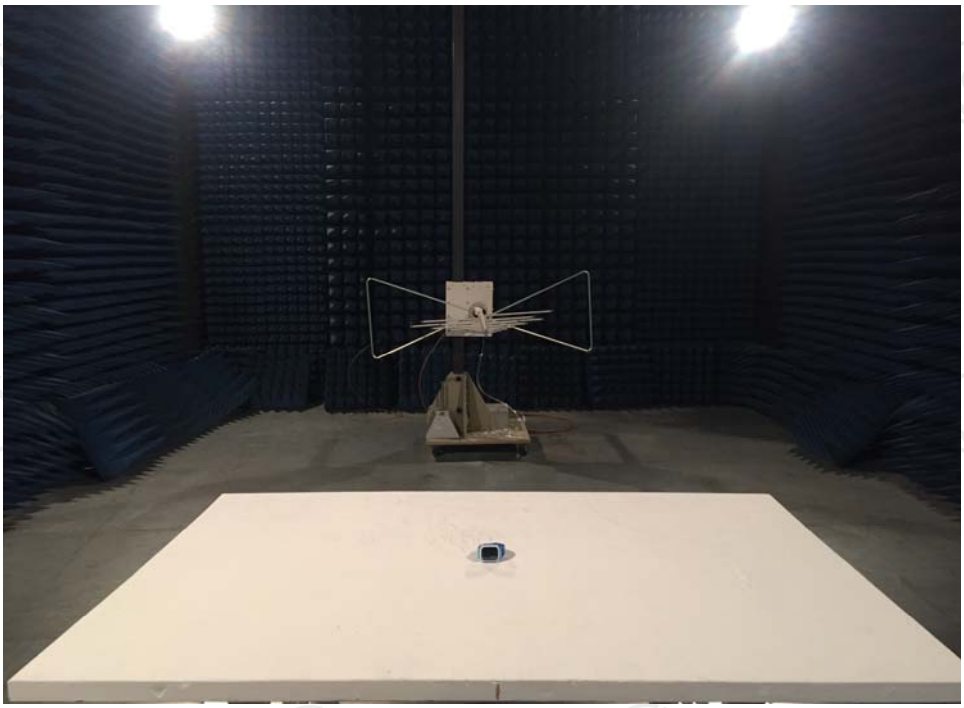
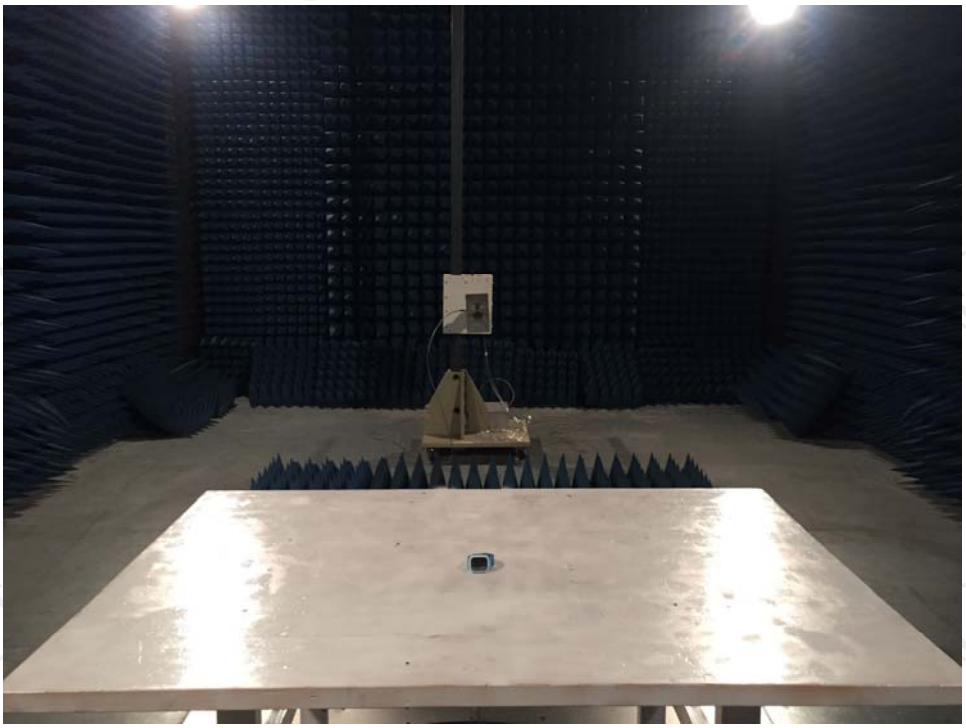
Appendix A: Photographs of Test Setup

Product: ClicClock
Model: Q50
Radiated Emission





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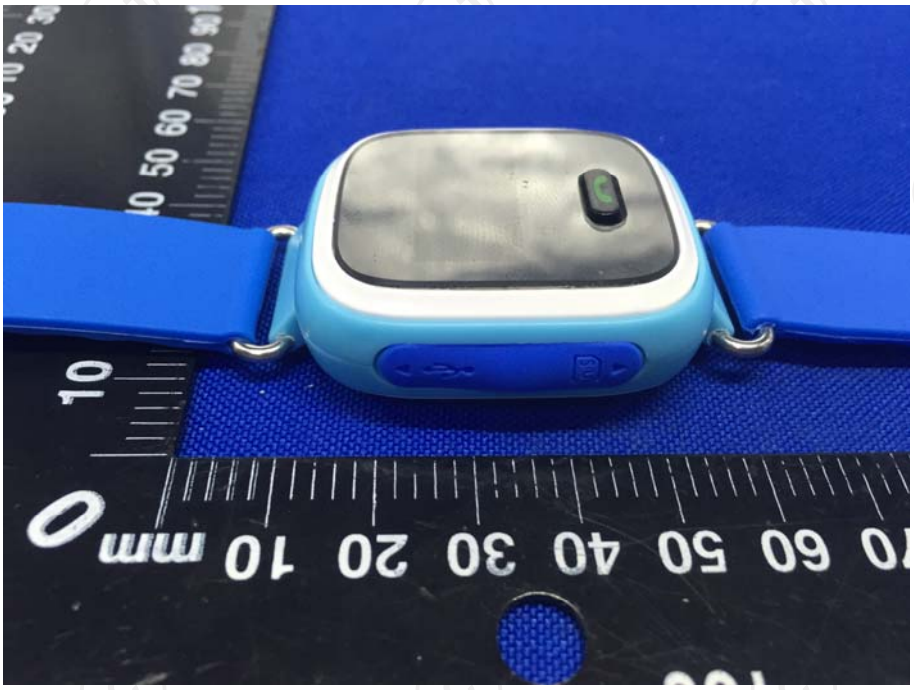
Appendix B: Photographs of EUT
Product: ClicClock
Model: Q50
External Photos


BOSI
BS1363



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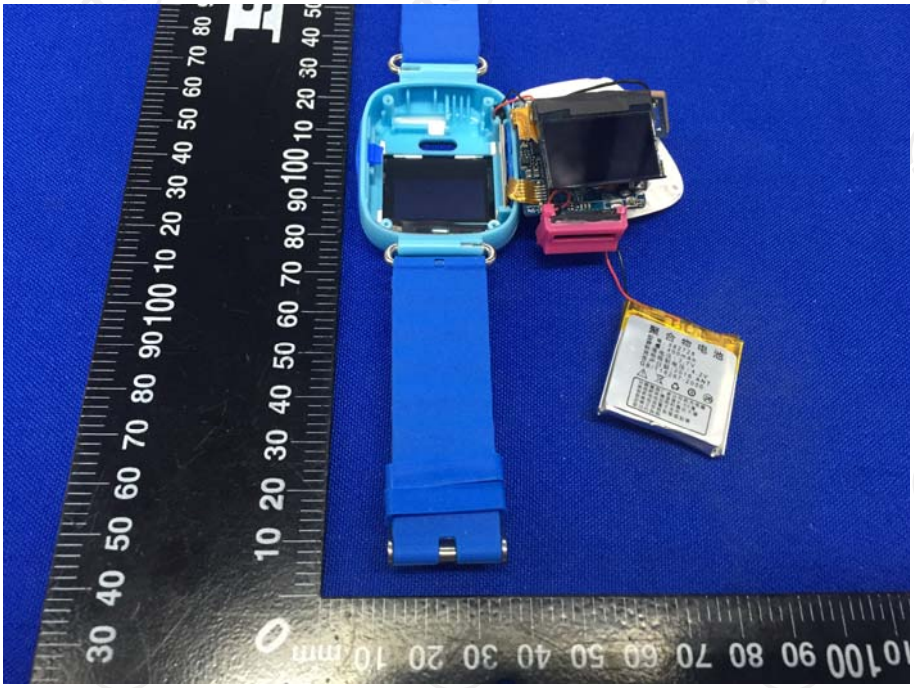
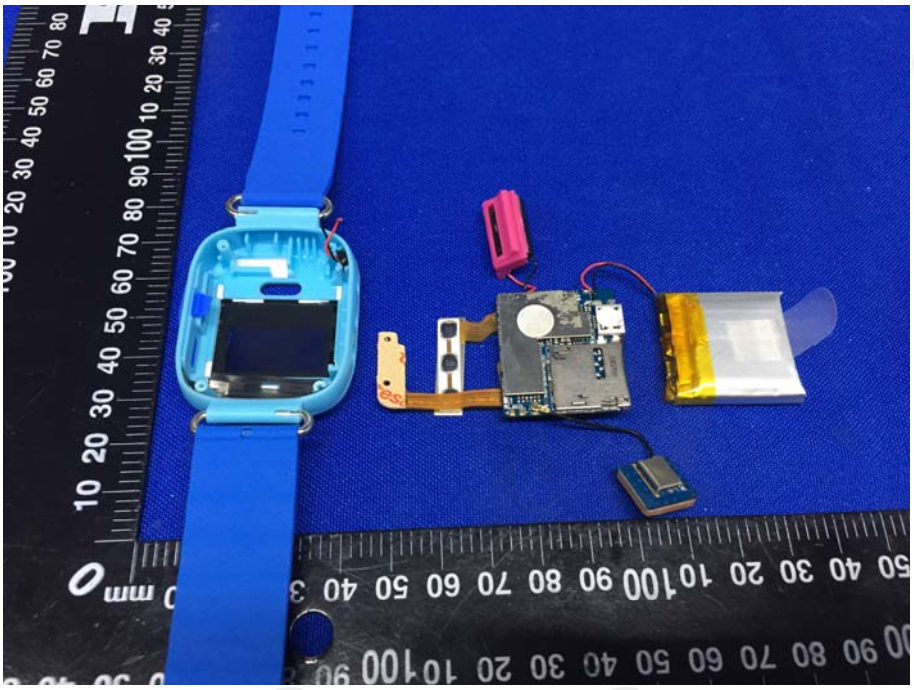
Product: ClicClock
Model: ClicClock
Internal Photos





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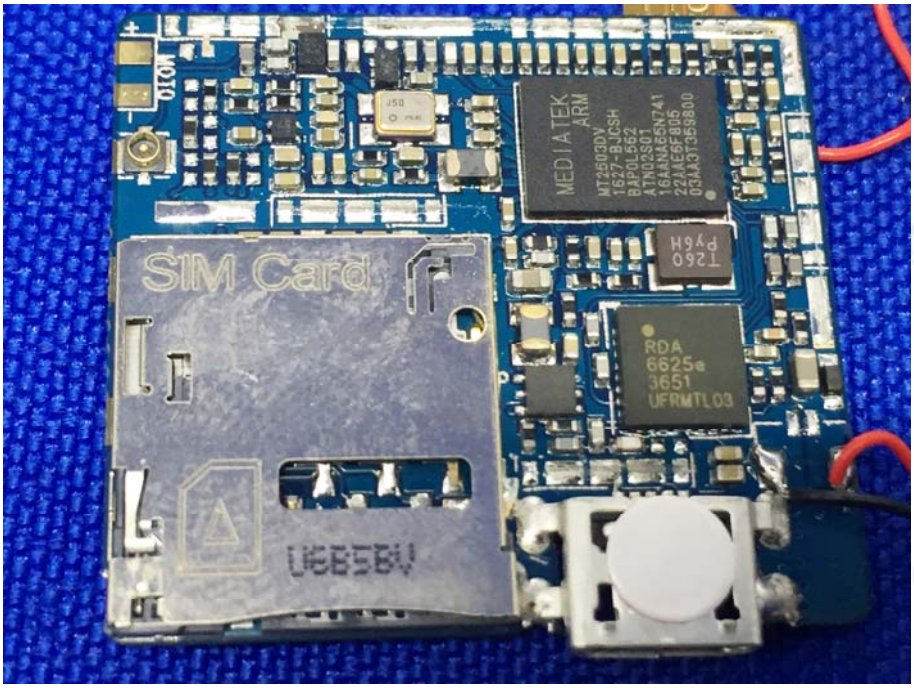
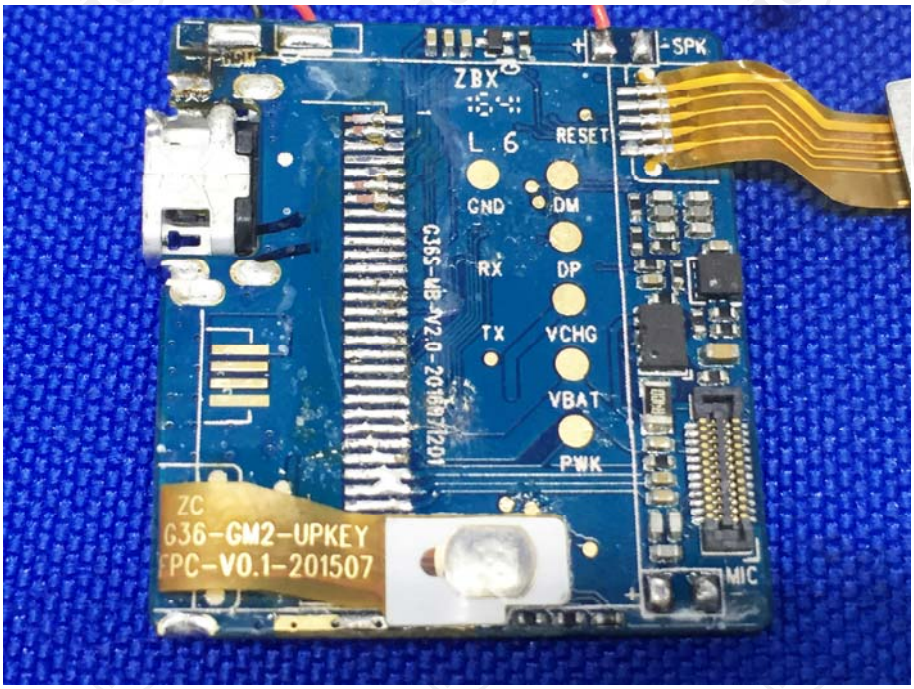
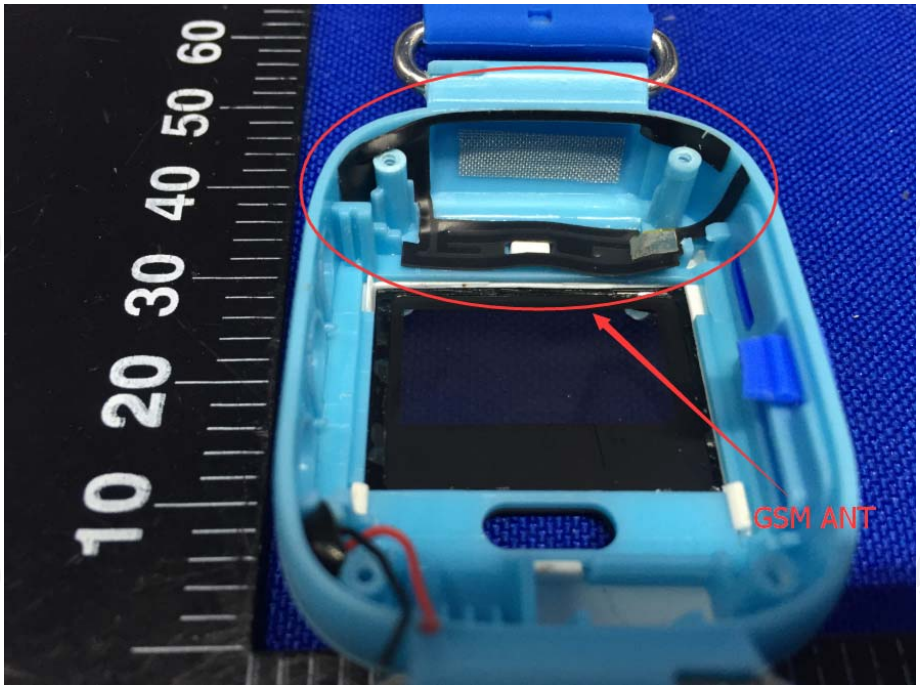
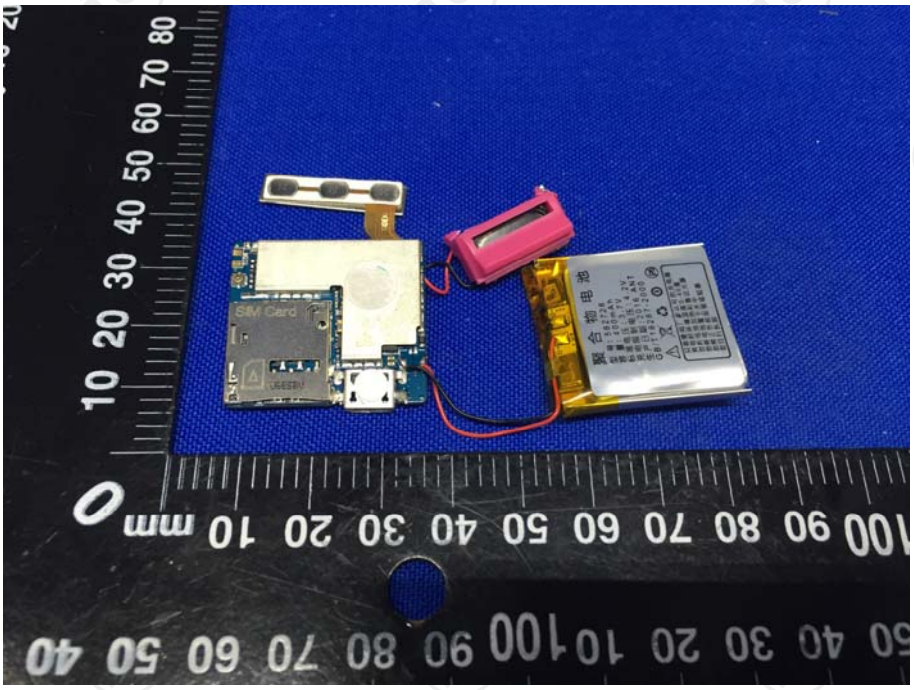
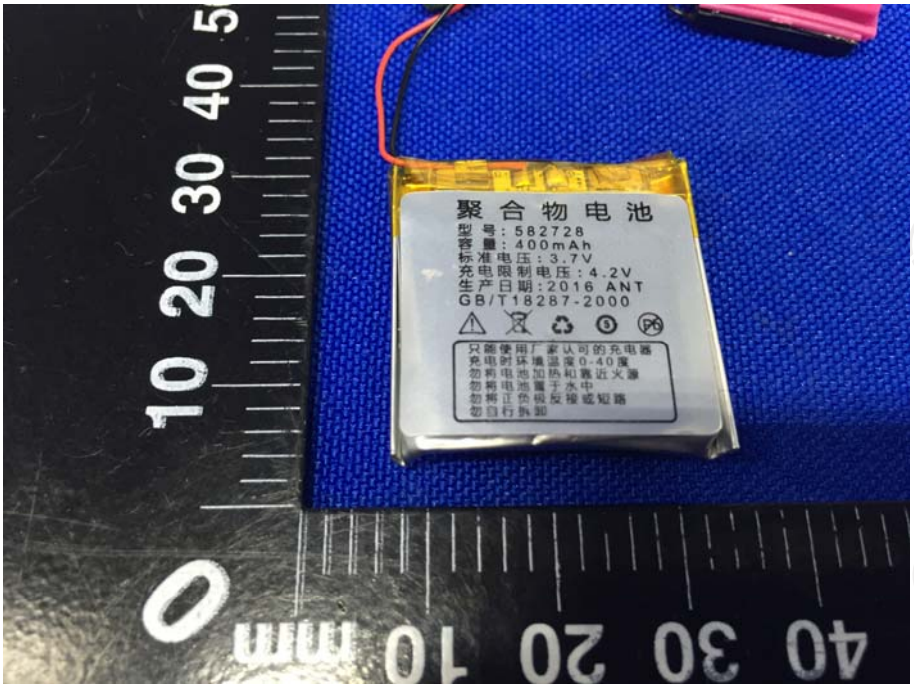

SIM Card
MEDIATEK
ARM
RDA
6625e
3651
UFRMTL03


SPK
ZBX
L6
RESET
GND
DM
RX
DP
TX
VCHG
VBAT
PWK
MIC
ZC
G36-GM2-UPKEY
PC-V0.1-201507


GSM ANT


SIM Card



*****END OF REPORT*****