FCC TEST REPORT

GSM/WCDMA MOBILE PHONE

Model Number: M4 SS1060

FCC ID: CLNSS1060

Report Number : WT138001696

Test Laboratory	:	Shenzhen Inspection	Academy	of	Metrology	and	Quality
			gital Electro	nic P	roduct Testi	ng Cei	nter
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Test report declaration

Applicant	:	MFOURTEL MEXICO S.A. DE C.V.
Address	:	Montecito 38, Piso 23, Oficina 15. Colonia Nápoles. C.P. 03810 Mexico 3/F, Skyworth Building C Gaoxin S. Ave. 1st, High-Tech industrial Park NanShan, ShenZhen
Manufacturer	:	CK Telecom Limited
Address	:	Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.
EUT Description	:	GSM/WCDMA MOBILE PHONE
Model No	:	M4 SS1060
Trade mark	:	M4
Serial Number	:	862743020000180 862743020000727
FCC ID	:	CLNSS1060

Test Standards:

FCC Part 15 15.207, 15.209, 15.247(2012)

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.207, 15.209 and 15.247.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	是733	Date:	Sept.9,2013
	(Wu Feiyun)		
Checked by:	的话奉	Date:	Sept.9,2013
	(Chen QiChun) ず拝a 入		
Approved by:	(Lin Bin)	Date:	Sept.9,2013

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1. TEST RESULTS SUMMARY

Table 1 Test Results Summary						
Test Items	FCC Rules	Test Results				
6dB DTS bandwidth measurement	15.247 (a) (2)	Pass				
Maximum Peak Conducted Power	15.247 (b) (3)	Pass				
Maximum Power Spectral Density Level	15.247 (3)	Pass				
Conducted Bandedge and Spurious	15.247 (d)	Pass				
Radiated Bandedge and Spurious	15.247 (d) 15.209 15.205	Pass				
Conducted emission test for AC power port	15.207	Pass				
Antenna Requirment	15.203	Pass				

Table 1 Test Results Summary

Remark: " N/A" means " Not applicable."

2. GENERAL INFORMATION

2.1. Report information

- 2.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.
- 2.1.2.The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.
- 2.1.3.Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at Bldg. of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number are 446246 806614 994606(semi anechoic chamber).

The Laboratory is listed in Voluntary Control Council for Interference by Information

Technology Equipment (VCCI), and the registration number are R-1974(open area test site) , R-1966(semi anechoic chamber),C-2117(mains ports conducted interference measurement) and T-180(telecommunication ports conducted interference measurement).

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

2.3. Measurement Uncertainty

Conducted Emission 9kHz~30MHz 3.5dB

Radiated Emission 30MHz~1000MHz 4.5dB 1GHz~18GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1.EUT Description

Description	: GSM/WCDMA MOBILE PHONE
Manufacturer	CK Telecom Limited
Model Number	<u>.</u> M4 SS1060
Operate	: Bluetooth Low Energy
Operate Frequency	: Bluetooth Low Energy 2.402GHz~2.480GHz
•	

Bluetooth Low Energy :

Table 2 Working Frequency List

Regulatory Range	RF Channels
2.400-2.4835 GHz	f=2402+k*2 MHz, k=0, ,39

3.2.Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: CLNSS1060, filing to comply with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

3.3. Block Diagram of EUT Configuration

	EUT]	AC adaptor	
Figure 1 EU	T setup			

3.4. Operating Condition of EUT

Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power. Worst-case data rates as provided by the client were:

Bluetooth low energy

Test mode is configured to be with duty cycle >98%

3.5. Directional Antenna Gain

The EUT does NOT support a WIFI MIMO function. Directional gain need NOT to be considered.

3.6. Support Equipment List

Table 3 Support Equipment List

Name	Model No	S/N	Manufacturer
Adaptor	HKC0035050-2R		Huntkey

3.7.Test Conditions

Date of test : Aug 29-Sept 6, 2013 Date of EUT Receive : Aug 28, 2013 Temperature: 23-24 °C Relative Humidity: 53-56%

3.8. Special Accessories

Not available for this EUT intended for grant.

3.9. Equipment Modifications

Not available for this EUT intended for grant.

4. TEST EQUIPMENT USED

Table 4 Test Equipment

			<u> </u>		
No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
SB2603	EMI Test Receiver	Rohde & Schwarz	ESCS30	Jan.21, 2013	1 Year
SB3321	AMN	Rohde & Schwarz	ESH2-Z5	Jan.21, 2013	1 Year
SB2604	AMN	Rohde & Schwarz	ESH3-Z5	Jan.21, 2013	1 Year
SB8501/09	EMI Test Receiver	Rohde & Schwarz	ESU40	May.17, 2013	1 Year
SB8501/04	Bilog Antenna	Schwarzbeck	VULB9163	Jan.21, 2013	1 Year
SB3435	Horn Antenna	Rohde & Schwarz	HF906	Jan.21, 2013	1 Year
SB3435/01	Amplifier(1-18GHz)	Rohde & Schwarz		Jan.21, 2013	1 Year
SB3435/02	Amplifier(18-40GHz)	Rohde & Schwarz		May.17, 2013	1 Year
SB5392/02	Horn Antenna	Amplifier Research	AT4560	May.17, 2013	1 Year
SB3450/01	3m Semi-anechoic chamber	Albatross Projects	9X6X6	Oct.12, 2012	2 Years
SB3345	Loop Antenna	Schwarzbeck	FMZB1516	Jan.23, 2012	2 Years

5. 6DB BANDWIDTH MEASUREMENT

5.1.LIMITS OF 6dB BANDWIDTH MEASUREMENT

CFR 47 (FCC) part 15.247 (a) (2) and 558074 D01 DTS Meas Guidance v03r01

5.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) \geq 3 RBW.

c)Detector = Peak.

d)Trace mode = max hold.

e)Sweep = auto couple.

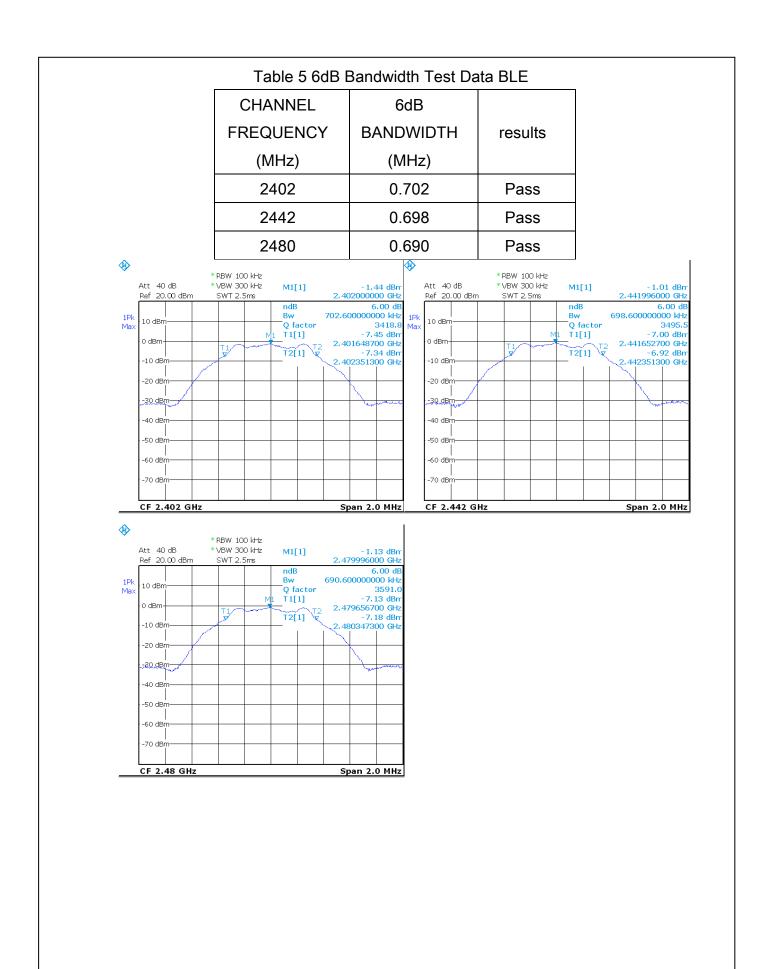
f)Allow the trace to stabilize.

g)Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.3.TEST SETUP



5.4. Test Data



6. MAXIMUM PEAK CONDUCTED OUTPUT POWER MEASUREMENT

6.1.LIMITS OF Maximum Peak Conducted Output Power Measurement

CFR 47 (FCC) part 15.247 (b) (3) and 558074 D01 DTS Meas Guidance v03r01

6.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.

a)Set the RBW = 1 MHz.

b)Set the VBW ≥ 3 RBW

c)Set the span \geq 1.5 x DTS bandwidth.

d)Detector = peak.

e)Sweep time = auto couple.

f)Trace mode = max hold.

g)Allow trace to fully stabilize.

h)Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges

6.3.TEST DATA



7. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

7.1.LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.247 (e) and 558074 D01 DTS Meas Guidance v03r01

7.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.

a)Set analyzer center frequency to DTS channel center frequency.

b)Set the span to 1.5 times the DTS bandwidth.

c)Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.

d)Set the VBW \geq 3 RBW.

e)Detector = peak.

f)Sweep time = auto couple.

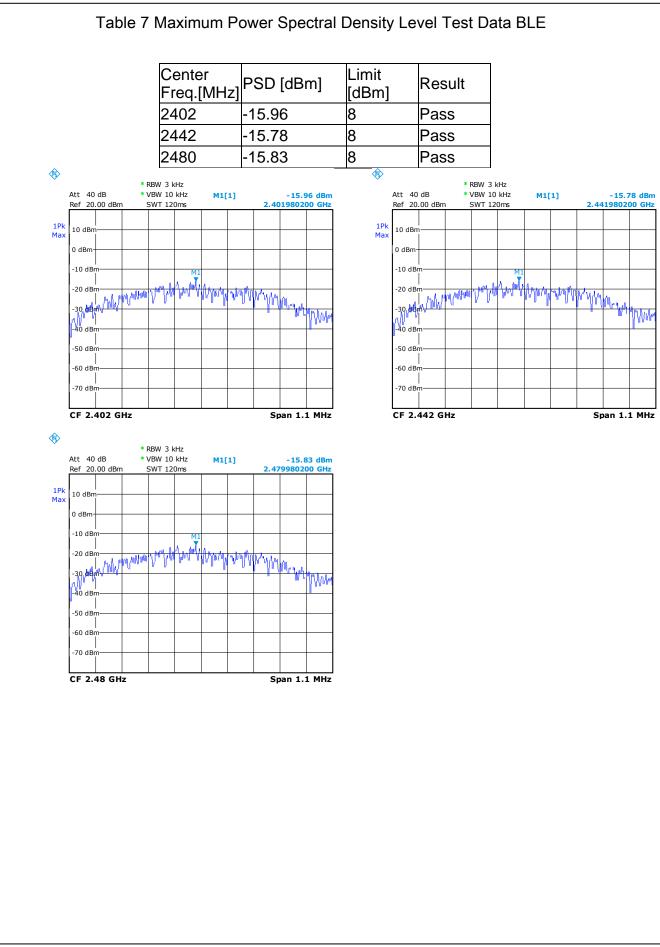
g)Trace mode = max hold.

h)Allow trace to fully stabilize.

i)Use the peak marker function to determine the maximum amplitude level within the RBW.

j)If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

7.3.TEST DATA



8. CONDUCTED BANDEDGE AND SPURIOUS MEASURMENT

8.1.LIMITS OF Conducted Bandedge and Spurious Measurement

CFR 47 (FCC) part 15.247 (d) and 558074 D01 DTS Meas Guidance v03r01

8.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.

Establish a reference level by using the following procedure:

a)Set instrument center frequency to DTS channel center frequency.

b)Set the span to \geq 1.5 times the DTS bandwidth.

c)Set the RBW = 100 kHz.

d)Set the VBW \geq 3 x RBW.

e)Detector = peak.

f)Sweep time = auto couple.

g)Trace mode = max hold.

h)Allow trace to fully stabilize.

i)Use the peak marker function to determine the maximum PSD level.

Emission level measurement

a)Set the center frequency and span to encompass frequency range to be measured.

b)Set the RBW = 100 kHz.

c)Set the VBW \geq 3 x RBW.

d)Detector = peak.

e)Ensure that the number of measurement points \geq span/RBW

f)Sweep time = auto couple.

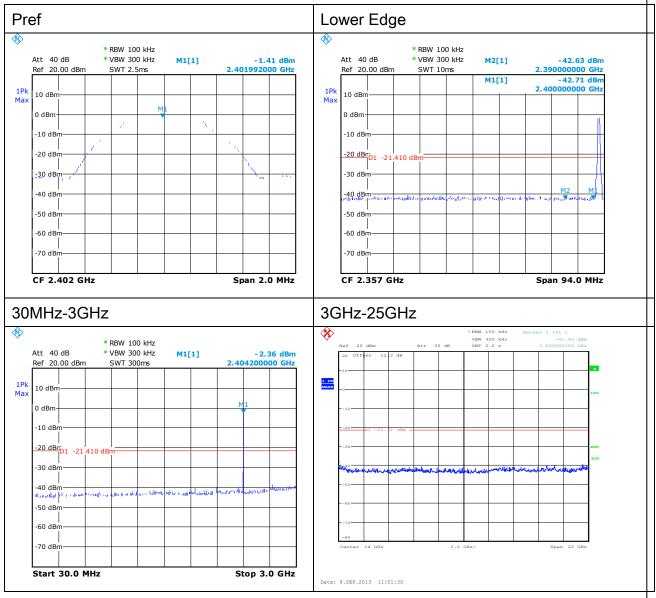
g)Trace mode = max hold.

h)Allow trace to fully stabilize.

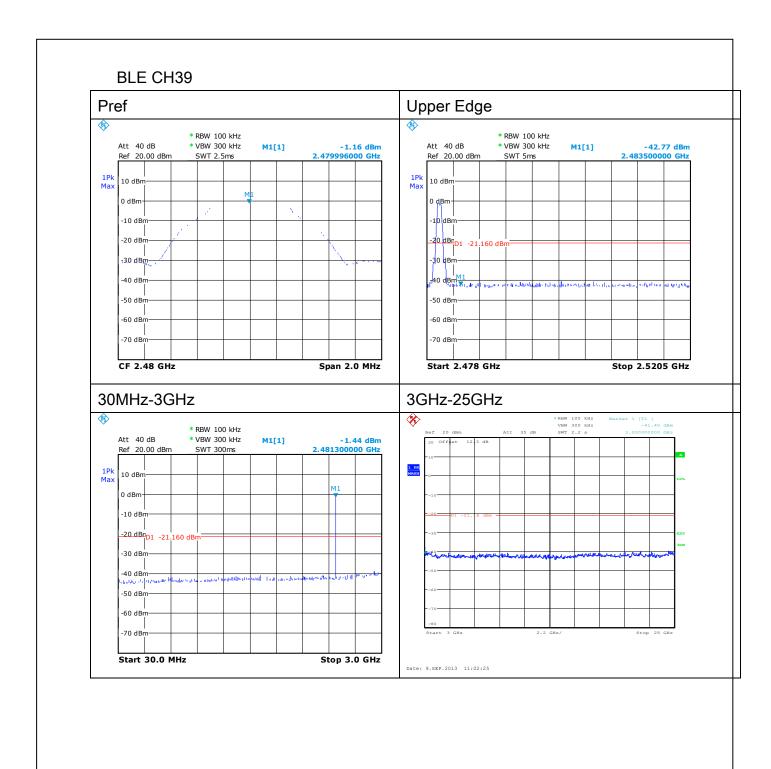
i)Use the peak marker function to determine the maximum amplitude level.

8.3.TEST DATA









9. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

9.1.LIMITS OF Radiated Bandedge and Spurious Measurement

CFR 47 (FCC) part 15.247 (d) and 558074 D01 DTS Meas Guidance v03r01

9.2.TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.10-2009.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.

3. The EUT was placed on a turntable with 0.8 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. Use the following spectrum analyzer settings:

(1) Span shall wide enough to fully capture the emission being measured;

(2) Set RBW=100 kHz for f < 1 GHz; VBW >= RBW; Sweep = auto; Detector function= peak; Trace = max hold;

(3) Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement.

Set RBW = 1 MHz, VBW= 10Hz for f > 1 GHz for AV measurement.

9.3.TEST DATA

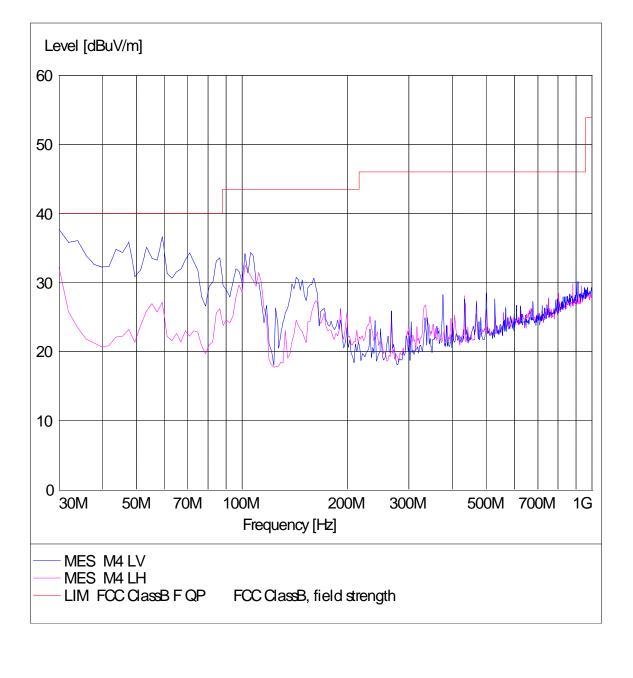
30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

	Table 8 Radiated Emission Test Data 30-1GHz								
Frequency MHz		Antenna Factor(d B)	Readings(d BµV/m)	Level(dBµ V/m))	Turntable Angle(de g)	Antenna Height(m)	Limits(dBµV/m)	Margin(d B)
30.012	0.6	12.3	17.8	30.7	Н	206.4	1.2	40.0	9.3
125.012	1.2	10.5	20.4	32.1	Н	234.2	1.0	43.5	11.4
105.811	1.2	13.2	17.1	31.5	Н	87.2	1.2	43.5	12.0
120.325	1.3	10.5	17.9	29.7	Н	278.1	1.1	43.5	13.8
175.634	1.5	9.0	15.8	26.3	Н	12.7	1.1	43.5	17.2
330.436	2.2	13.3	4.6	20.1	Н	3.9	1.1	46.0	25.9
30.000	0.6	12.3	21.7	34.6	V	321.2	1.1	40.0	5.4
47.494	0.8	13.6	15.8	30.2	V	352.3	1.2	40.0	9.8
59.158	0.9	13.0	19.7	33.6	V	193.1	1.1	40.0	6.4
70.821	0.9	8.7	20.0	29.6	V	110.2	1.1	40.0	10.4
105.811	1.2	13.2	18.0	32.4	V	55.0	1.1	43.5	11.1
152.736	1.4	8.3	18.6	28.3	V	135.5	1.2	43.5	15.2

SMQ NETC EMC Lab.3m Chamber

EUT Name:M4 SS1060Manufacturer:Operator:Operator:802.11n 40MAntenna Position:Vertical&HorizontalComment1:AC 120V/60HzComment2:Karlow



1GHz-18GHz BLE CH0

Radiated Emission

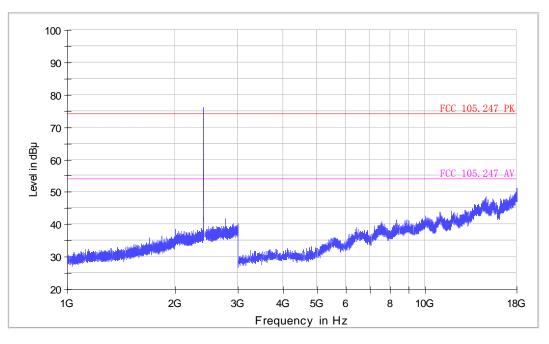
EUT Information

EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH0 AC 120V/60Hz

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment: SMQ EMC Lab.

Horizontal



EUT Information

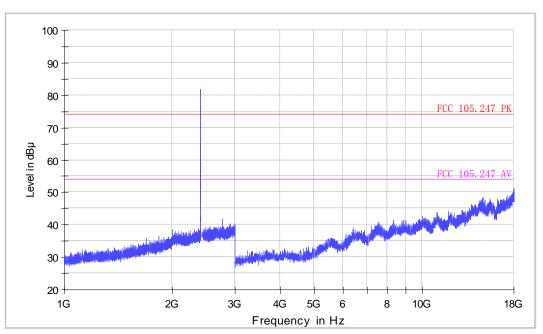
EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH0 AC 120V/60Hz

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment:

SMQ EMC Lab.

Vertical



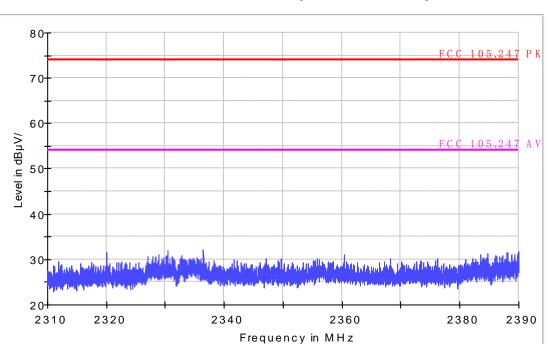
EUT Information

EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH0

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment:

SMQ EMC Lab. Horizontal



FCC Electric Field Strength 2.4GHz Bandedge-PK

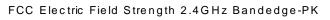
EUT Information

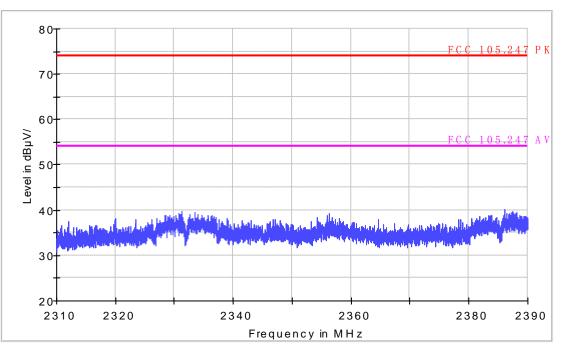
EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH0

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment: SMQ EMC Lab.

Vertical





BLE CH20

Radiated Emission

EUT Information

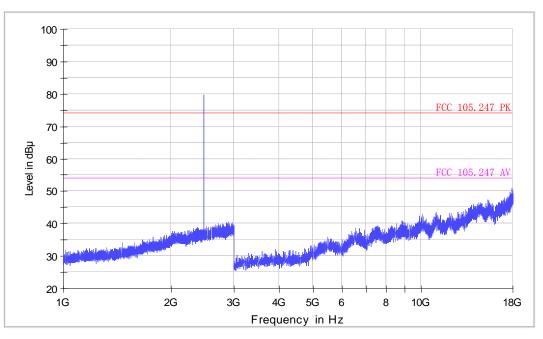
EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH20 AC 120V/60Hz

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment: SMQ EMC Lab.

Horizontal





EUT Information

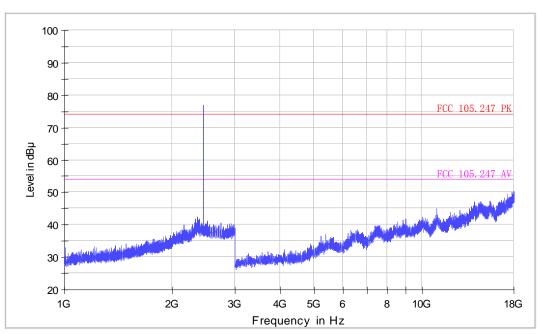
EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH20 AC 120V/60Hz

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment:

SMQ EMC Lab.

Vertical



BLE CH39

Radiated Emission

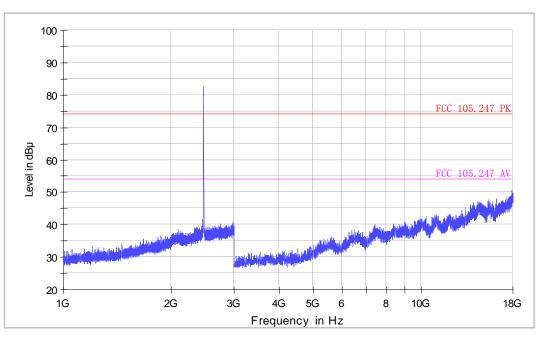
EUT Information

EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH39 AC 120V/60Hz

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment: SMQ EMC Lab.

Horizontal



EUT Information

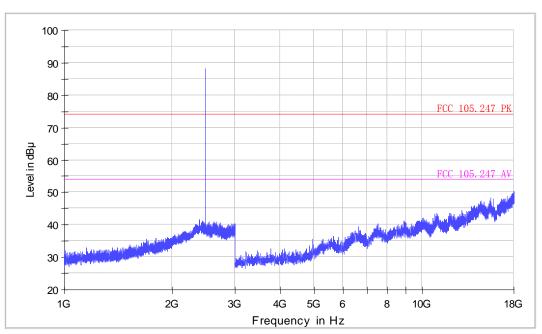
EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH39 AC 120V/60Hz

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment:

SMQ EMC Lab.

Vertical



EUT Information

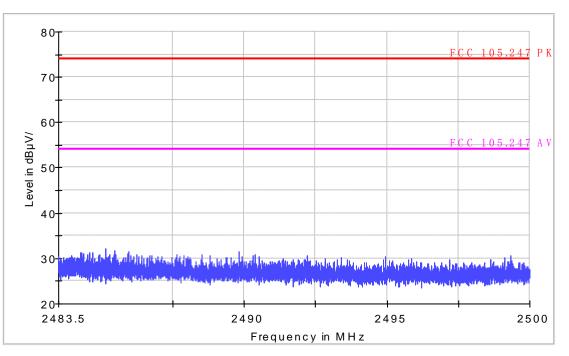
EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH39

Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment:

SMQ EMC Lab. Horizontal

Copy of FCC Electric Field Strength 1-18GHz



EUT Information

EUT Model Name: Operation mode: Test Voltage: Comment: M4 SS1060 BLE CH39

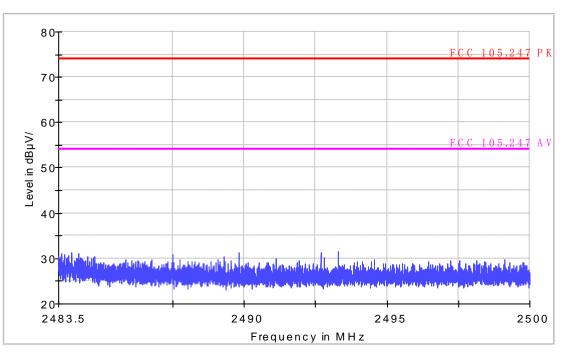
Common Information

Test Site: Environment Antenna Polarization: Operator Name: Comment:

SMQ EMC Lab.

Vertical

Copy of FCC Electric Field Strength 1-18GHz



10. CONDUCTED EMISSION TEST FOR AC POWER PORT MEASUREMENT

10.1.Test Standard and Limit

10.1.1.Test Standard

FCC Part 15 15.207

10.1.2.Test Limit

Table 9 Conducted Disturbance Test Limit							
Frequency	Maximum RF Line Voltage (dB μ V)						
	Quasi-peak Level	Average Level					
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *					
500kHz~5MHz	56	46					
5MHz~30MHz	60	50					

Table 9 Conducted Disturbance Test Limit

* Decreasing linearly with logarithm of the frequency

* The lower limit shall apply at the transition frequency.

10.2.Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. According to the requirements in Section 7 and 13 of ANSI C63.4-2003.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

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

10.3.Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

10.4.Test Data

The emissions don't show in below are too low against the limits. Refer to the test curves.

Model No.: M4 SS1060

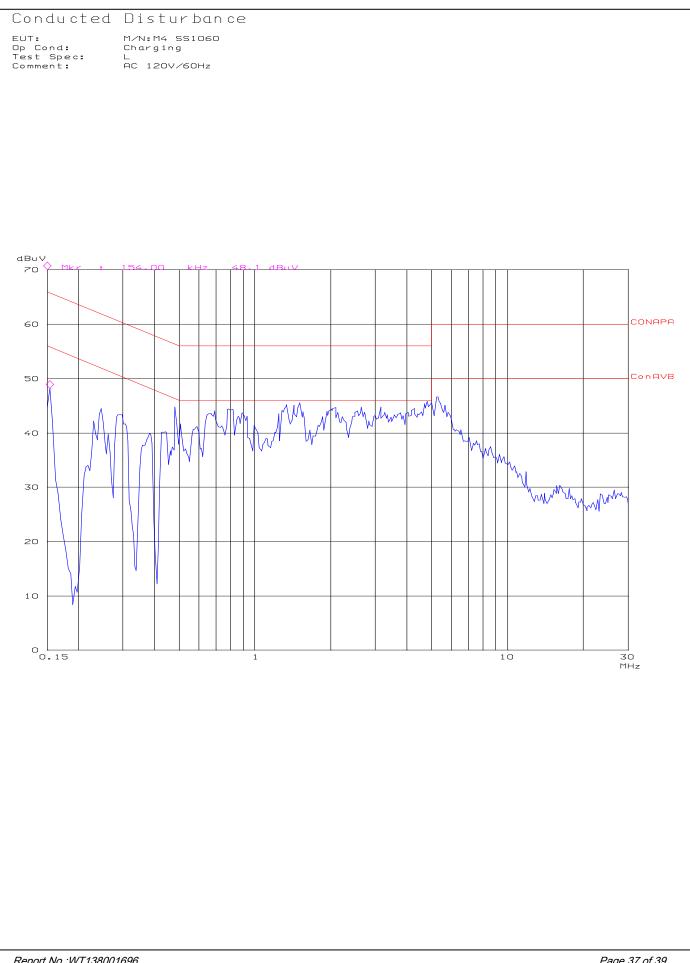
Test mode: 802.11n 40M

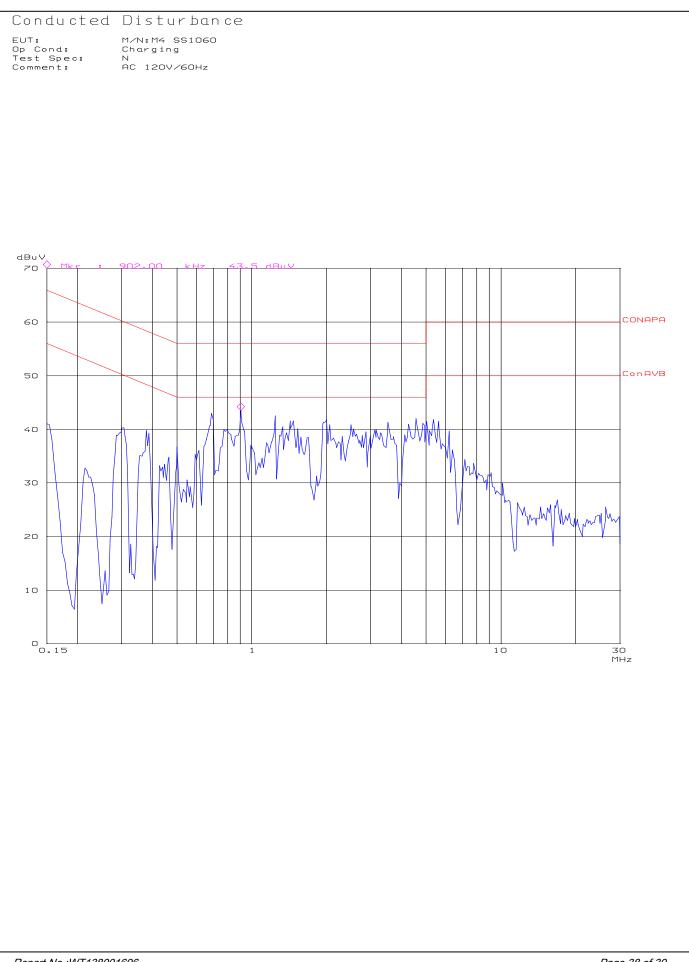
	Frequency	Correction	Quasi-Peak			Average		
	(MHz)	Factor (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Reading (dBμV)	Emission Level (dBµV)	Limits (dBµV)
	0.154	9.7	32.2	41.9	65.8	18.5	28.2	55.8
Line	0.246	9.7	25.8	35.5	61.9	2.9	12.6	51.9
	0.786	9.8	32.3	42.1	56	14.5	24.3	46
	1.335	9.8	28.8	38.6	56	13.7	23.5	46
	1.495	9.8	30.8	40.6	56	14.3	24.1	46
	5.240	10.0	27.8	37.8	60	17.6	27.6	50
0.9 Neutral 1.2 1.4	0.690	9.8	27.4	37.2	56	9.8	19.6	46
	0.902	9.8	27.3	37.1	56	13.0	22.8	46
	1.240	9.8	24.4	34.2	56	5.0	14.8	46
	1.425	9.8	27.3	37.1	56	13.1	22.9	46
	1.995	9.8	26.0	35.8	56	11.3	21.1	46
	5.370	10.0	23.9	33.9	60	11.7	21.7	50

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)

2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)

3. The other emission levels were very low against the limit.





11.ANTENNA REQUIREMENTS

11.1.Applicable requirements

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

11.2.Antenna Connector

Antenna Connector is on the PCB within enclosure and not accessible to user.

11.3.Antenna Gain

The antenna gain of EUT is less than 6 dBi.