RF TEST REPORT

Report No.: 16070468-FCC-R1

Supersede Report No.: N/A

Applicant	NEG TECHNOLOGY CO., LIMITED
Product Name	Mobile Phone
Model No.	F1022
Serial No.	N/A
Test Standard	FCC Part 22(H):2015 ;FCC Part 24(E):2015; ANSI/TIA-603-D: 2010
Test Date	April 26 to May 17, 2016
Issue Date	May 18, 2016
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Winnie Zhang	David Huang	
Winnie Zhang Test Engineer	David Huang Checked By	

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Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

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Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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CONTENTS

1. Report Revision History

Report No.	Report Version	Description	Issue Date
16070468-FCC-R1	NONE	Original	May 18, 2016

2. Customer information

Applicant Name	NEG TECHNOLOGY CO., LIMITED
Applicant Add	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China
Manufacturer	NEG TECHNOLOGY CO., LIMITED
Manufacturer Add	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Mobile Phone
Main Model:	F1022
Serial Model:	N/A
Date EUT received:	April 25, 2016
Test Date(s):	April 26 to May 17, 2016
Equipment Category：	PCE
Antenna Gain:	GSM850: 0.8dBi PCS1900: 1.0dBi Bluetooth: 1.0dBi
Type of Modulation:	GSM / GPRS: GMSK Bluetooth: GFSK, π /4DQPSK, 8DPSK
RF Operating Frequency (ies):	GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz Bluetooth: 2402-2480 MHz
Maximum Conducted AV Power to Antenna:	GSM Vioce:GSM850: 31.87 dBm PCS1900: 29.56 dBm GPRS:GSM850: 31.86 dBm PCS1900: 29.55 dBm
ERP/EIRP:	GSM Vioce: GSM850: 28.56dBm / ERP PCS1900: 30.34 dBm / EIRP GPRS: GSM850: 28.62dBm / ERP PCS1900: 30.39 dBm / EIRP

Number of Channels:	GSM 850: 124CH PCS1900: 299CH Bluetooth: 79CH
Port:	Power Port, Earphone Port, USB Port
Input Power:	Adapter : Model:F1022 Input: AC 100-240V~50/60Hz,150mA Output: DC 5.0V,500mA Battery: Model: F1022 Spec:3.7V,2.96Wh Battery Capacity:800mAh Limited charger voltage :4.2V
Trade Name :	OWN
GPRS Multi-slot class	8/10/12
FCC ID:	2AAZ8-F1022

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§ 1.1307; § 2.1093	RF Exposure (SAR)	Compliance
§2.1046; § 22.913(a); § 24.232(c); § 27.50(c.10) ; § 27.50(d.4)	RF Output Power	Compliance
§ 24.232 (d) ; § 27.50(d)	Peak-Average Ratio	Compliance
§ 2.1049; § 22.905; § 22.917; § 24.238; § 27.53(a.5)	99% & -26 dB Occupied Bandwidth	Compliance
§ 2.1051; § 22.917(a); § 24.238(a); § 27.53(h)	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917(a); § 24.238(a); § 27.53(h)	Field Strength of Spurious Radiation	Compliance
§ 22.917(a); § 24.238(a); § 27.53(h)	Out of band emission, Band Edge	Compliance
§ 2.1055; § 22.355; § 24.235; § 27.5(h); § 27.54	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

Measurement Uncertainty

Emissions		
Test Item	**Description**	**Uncertainty**
Band Edge and Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 RF Exposure (SAR)

Test Result: Pass

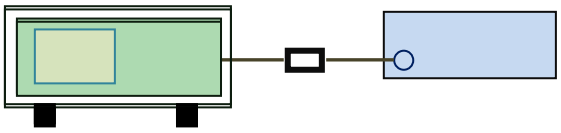
The EUT is a portable device, thus requires SAR evaluation;

Please refer to RF Exposure Evaluation Report: 16070468-FCC-H.

6.2 RF Output Power

Temperature	23℃
Relative Humidity	58%
Atmospheric Pressure	1006mbar
Test date :	May 06, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§22.913 (a)	a)	ERP:38.45dBm	☑
§24.232 (c)	b)	EIRP:33dBm	☑
§27.50 (c)	c)	EIRP: 30dBm	☑
Test Setup			
Test Procedure	For Conducted Power: - The transmitter output port was connected to base station. - Set EUT at maximum power through base station. - Select lowest, middle, and highest channels for each band and different test mode. For ERP/EIRP: According with KDB 971168 v02r02 - The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. - The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. - The frequency range up to tenth harmonic of the fundamental		

	frequency was investigated. - Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. - Spurious emissions in dB = 10 log (TX power in Watts/0.001) – the absolute level - Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

Conducted Power

GSM Mode:

Burst Average Power (dBm);								
Band	GSM850				PCS1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	/	1850.2	1880	1909.8	/
GSM Voice (1 uplink),GMSK	31.58	31.76	**31.87**	31±1	**29.56**	29.54	29.44	29±1
GPRS Multi-Slot Class 8 (1 uplink),GMSK	31.58	31.74	**31.86**	31±1	**29.55**	29.53	29.43	29±1
GPRS Multi-Slot Class 10 (2 uplink) GMSK	29.65	29.95	30.18	30±1	27.35	27.33	27.21	27±1
GPRS Multi-Slot Class 12 (4 uplink) GMSK	25.89	26.03	26.31	26±1	23.89	23.65	23.68	23±1
Remark : GPRS, CS1 coding scheme. Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link								

GSM:

ERP & EIRP

ERP for Cellular Band (Part 22H) (GSM Voice)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	21.89	V	6.8	0.53	28.16	38.45
824.2	20.62	H	6.8	0.53	26.89	38.45
836.6	22.15	V	6.8	0.53	28.42	38.45
836.6	20.71	H	6.8	0.53	26.98	38.45
848.8	22.19	V	6.9	0.53	**28.56**	38.45
848.8	20.66	H	6.9	0.53	27.03	38.45

EIRP for PCS Band (Part 24E) (GSM Voice)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	23.28	V	7.88	0.85	30.31	33
1850.2	21.83	H	7.88	0.85	28.86	33
1880	23.31	V	7.88	0.85	**30.34**	33
1880	21.79	H	7.88	0.85	28.82	33
1909.8	23.24	V	7.86	0.85	30.25	33
1909.8	21.77	H	7.86	0.85	28.78	33

GPRS:

ERP & EIRP

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	22.32	V	6.8	0.53	28.59	38.45
824.2	21.56	H	6.8	0.53	27.83	38.45
836.6	21.63	V	6.8	0.53	27.90	38.45
836.6	22.35	H	6.8	0.53	**28.62**	38.45
848.8	21.45	V	6.9	0.53	27.82	38.45
848.8	21.66	H	6.9	0.53	28.03	38.45

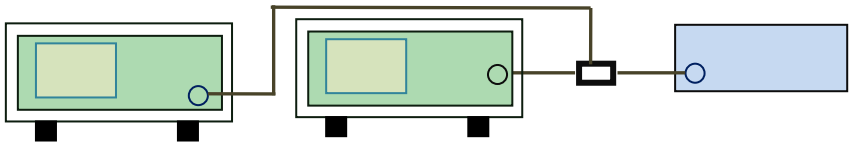
EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	22.46	V	7.88	0.85	29.49	33
1850.2	21.35	H	7.88	0.85	28.38	33
1880	23.36	V	7.88	0.85	**30.39**	33
1880	21.57	H	7.88	0.85	28.60	33
1909.8	22.98	V	7.86	0.85	29.99	33
1909.8	22.14	H	7.86	0.85	29.15	33

6.3 Peak-Average Ratio

Temperature	23℃
Relative Humidity	58%
Atmospheric Pressure	1006mbar
Test date :	May 06, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§24.232(d) § 27.50(d)	a)	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.	☑
Test Setup			
Test Procedure	**According with KDB 971168 v02r02** 1. The signal analyzer' s CCDF measurement profile is enabled 2. Frequency = carrier center frequency 3. Measurement BW > Emission bandwidth of signal 4. The signal analyzer was set to collect one million samples to generate the CCDF curve 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the " on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

GSM 1900 PK-AV POWER(PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	30.48	29.56	0.92
1880	30.56	29.54	1.02
1909.8	30.41	29.44	0.97

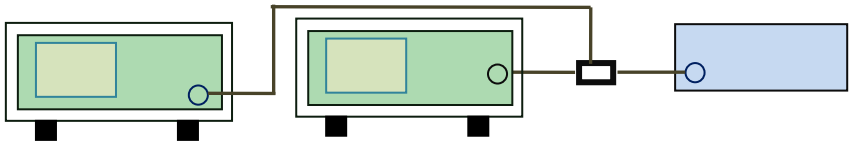
GPRS 1900 PK-AV POWER(PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	30.52	29.53	0.99
1880	30.47	29.47	1.00
1909.8	30.56	29.46	1.10

6.4 Occupied Bandwidth

Temperature	22℃
Relative Humidity	57%
Atmospheric Pressure	1005mbar
Test date :	May 05 & May 17, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1049, §22.917, §22.905 §24.238 §27.53(a)	a)	99% Occupied Bandwidth(kHz)	☑
	b)	26 dB Bandwidth(kHz)	☑
Test Setup			
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

GSM:

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	246.8344	314.229
190	836.6	247.3614	313.484
251	848.8	244.9214	319.625

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	249.3025	313.450
661	1880.0	247.8461	314.186
810	1909.8	245.1706	322.054

GPRS:

Cellular Band (Part 22H) result

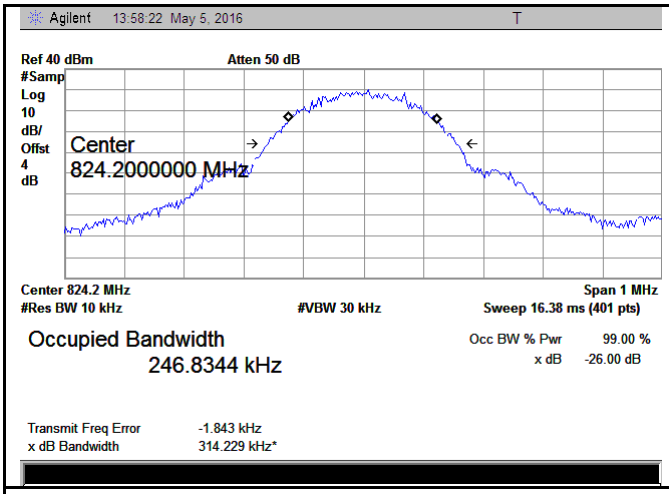
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	246.9961	314.497
190	836.6	242.2014	316.053
251	848.8	244.2805	310.286

PCS Band (Part 24E) result

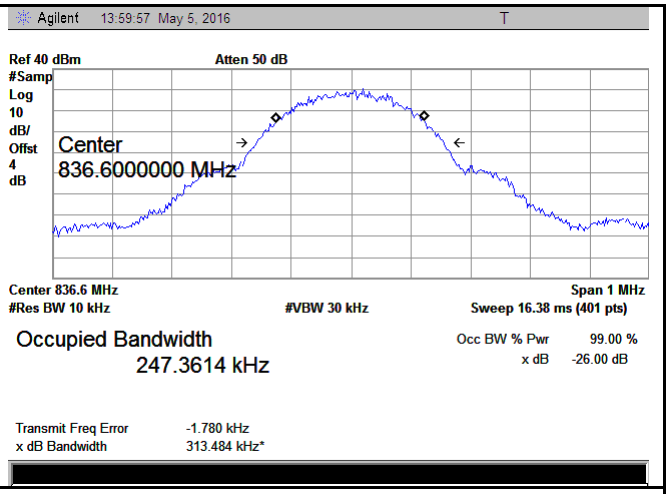
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850.2	245.8877	317.422
661	1880.0	246.6922	319.554
810	1909.8	245.5643	317.322

GSM:

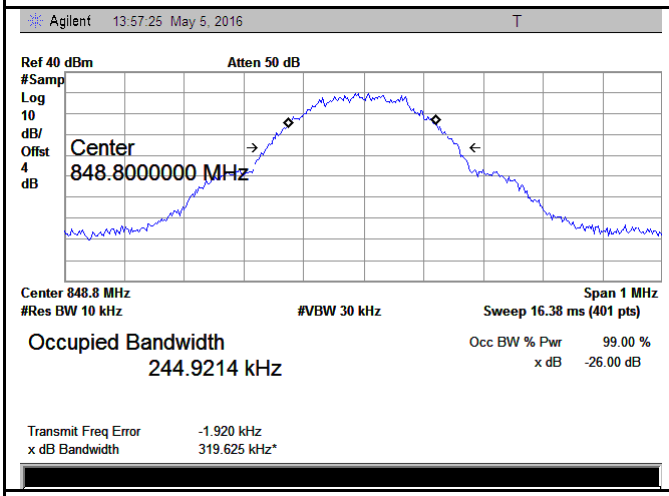
Test Plots



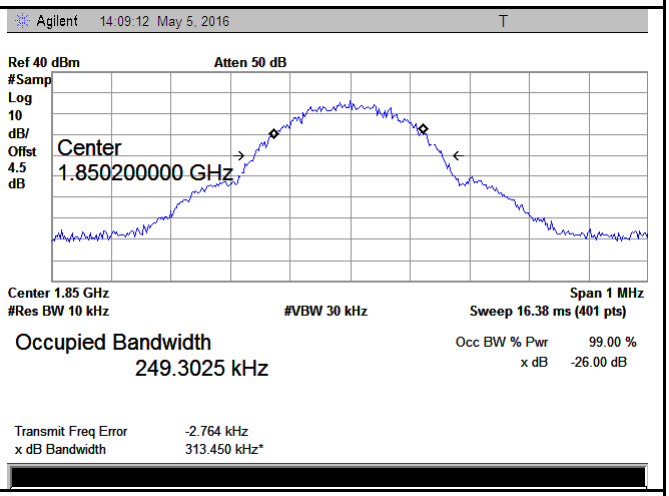
GSM 850 BW - Low CH 824.2MHz



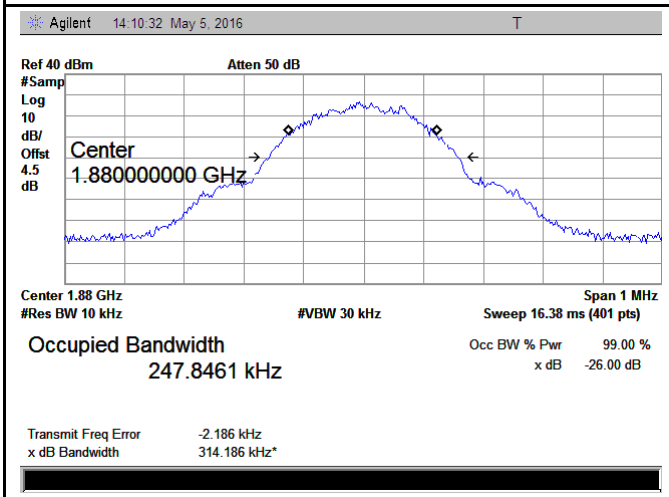
GSM 850 BW - Mid CH 836.6MHz



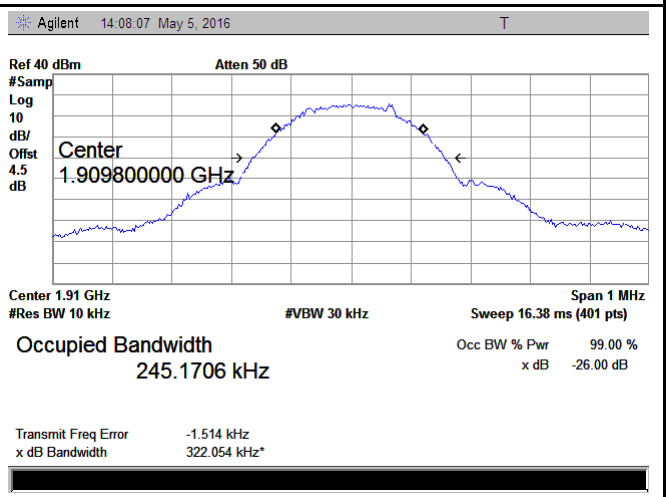
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850.2MHz



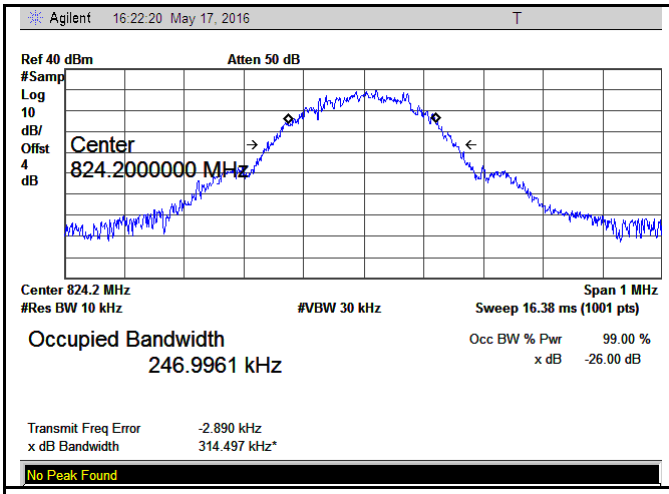
PCS 1900 BW - Mid CH 1880MHz



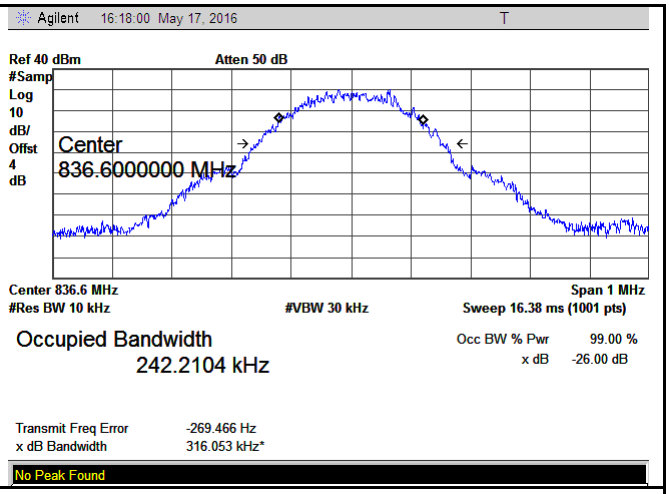
PCS 1900 BW - High CH 1909.8MHz

GPRS:

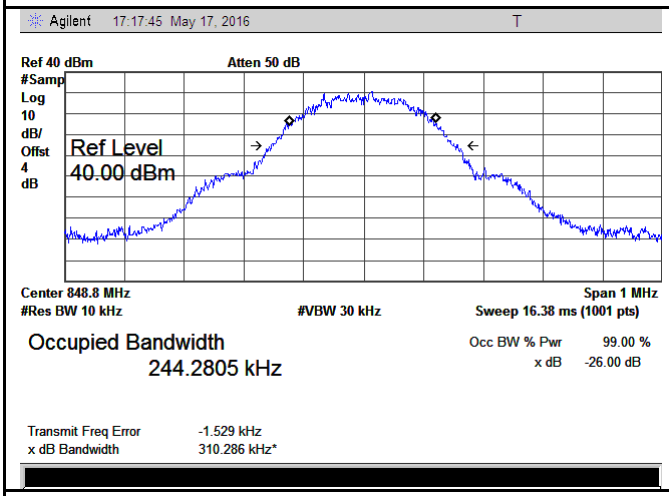
Test Plots



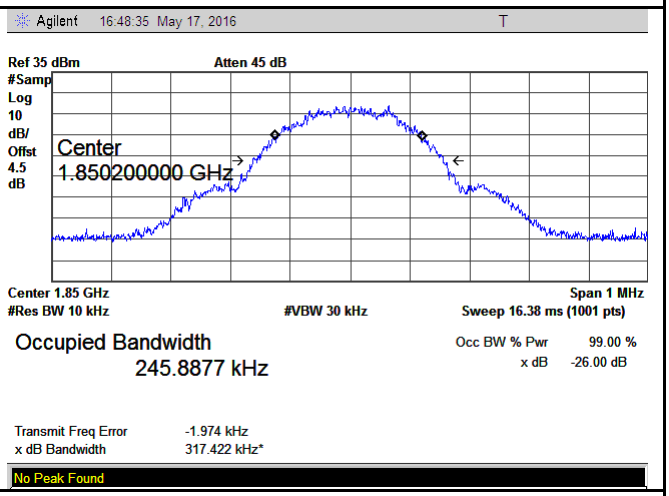
GSM 850 BW - Low CH 824.2MHz



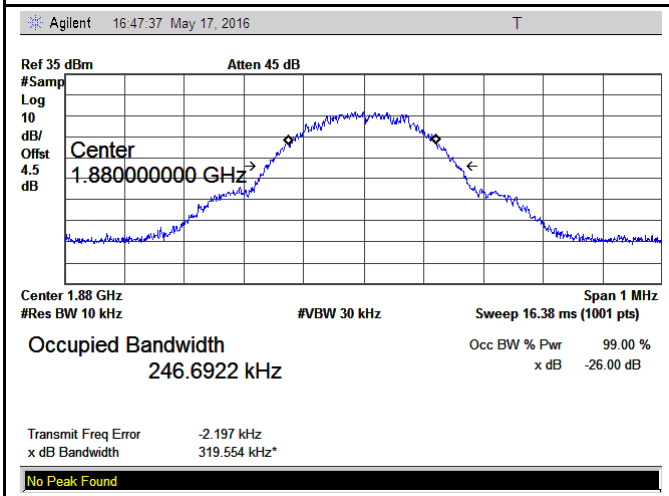
GSM 850 BW - Mid CH 836.6MHz



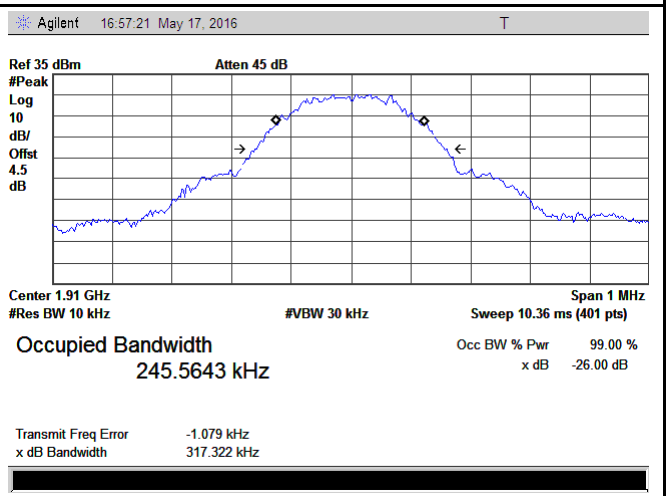
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850.2MHz



PCS 1900 BW - Mid CH 1880MHz

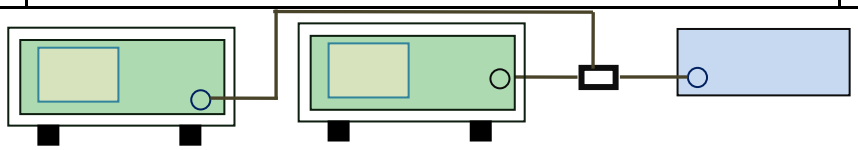


PCS 1900 BW - High CH 1909.8MHz

6.5 Spurious Emissions at Antenna Terminals

Temperature	22℃
Relative Humidity	57%
Atmospheric Pressure	1005mbar
Test date :	May 05 & May 17, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1051, §22.917(a)& §24.238(a) § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB	☑
Test Setup			
Test Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. - Setting RBW as roughly BW/100.		
Remark			
Result	☑ Pass ☐ Fail		

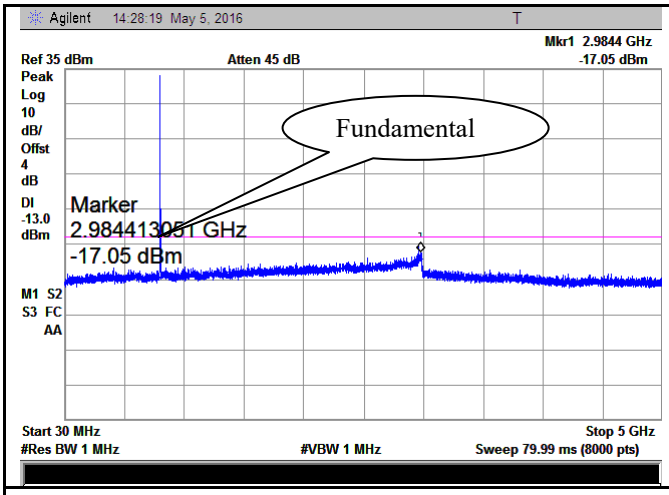
Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

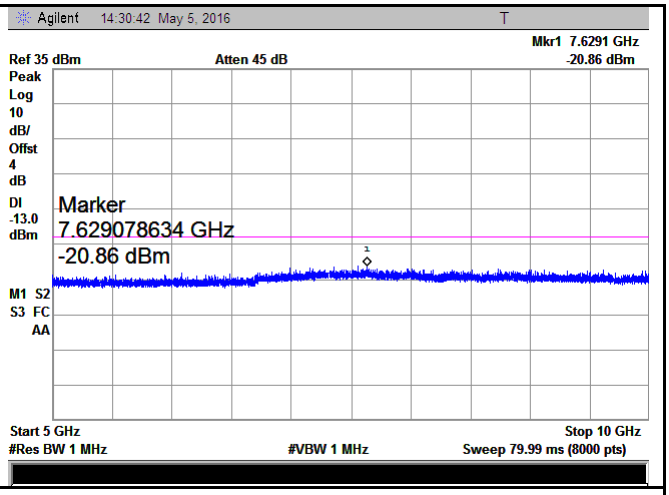
GSM:

Test Plots

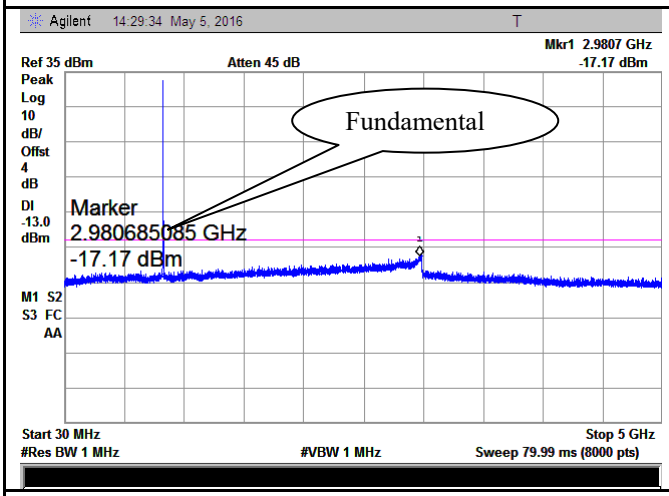
Cellular Band (Part 22H) result



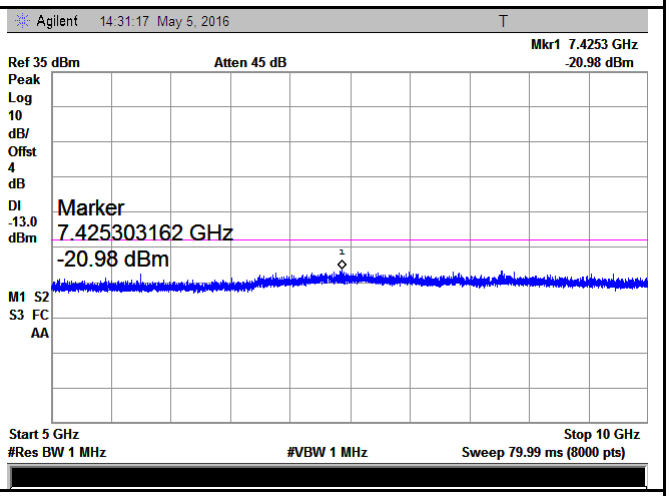
GSM 850 - Low Channel-1



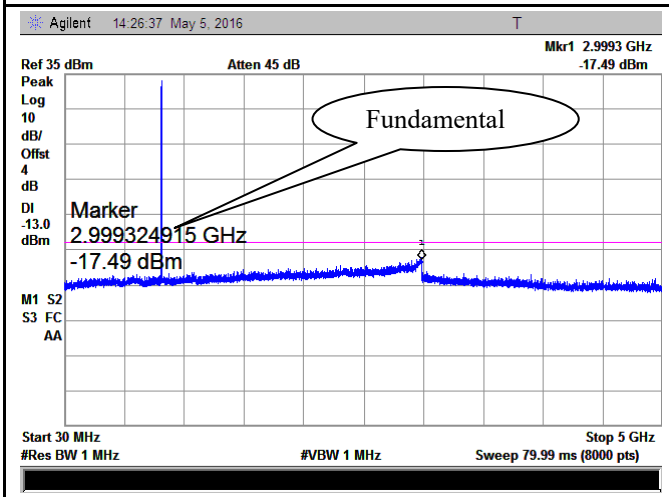
GSM 850 - Low Channel-2



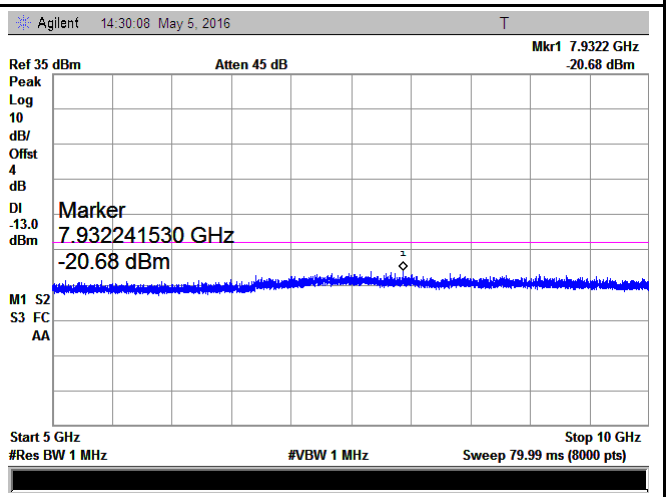
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

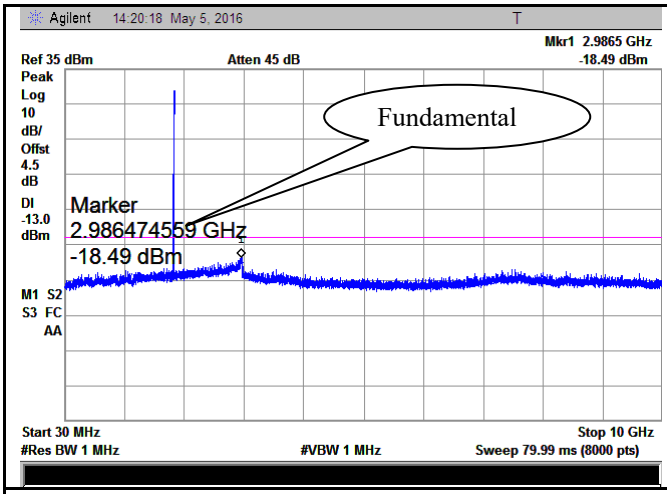


GSM 850 - High Channel-1

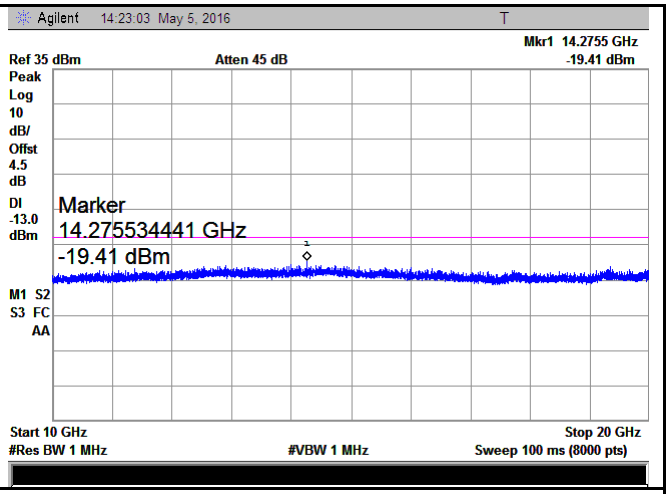


GSM 850 - High Channel-2

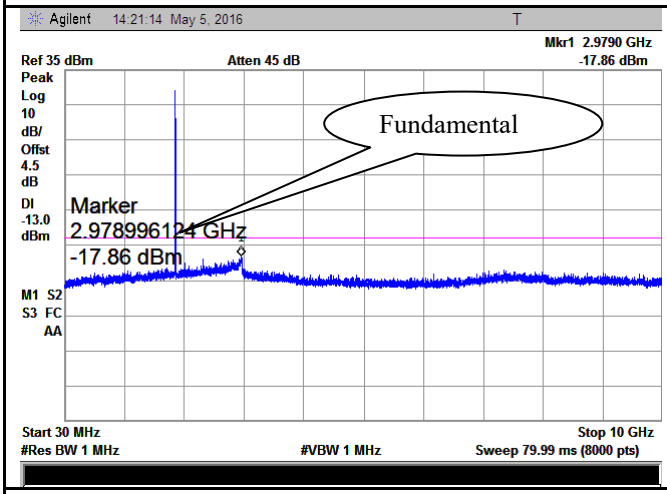
PCS Band (Part24E) result



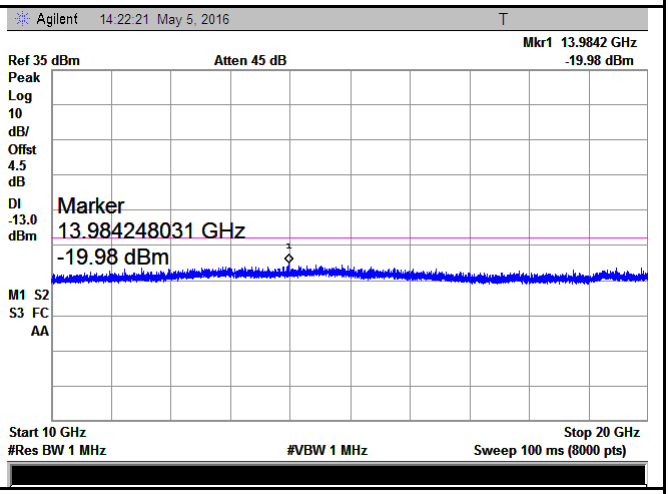
PCS1900 - Low Channel-1



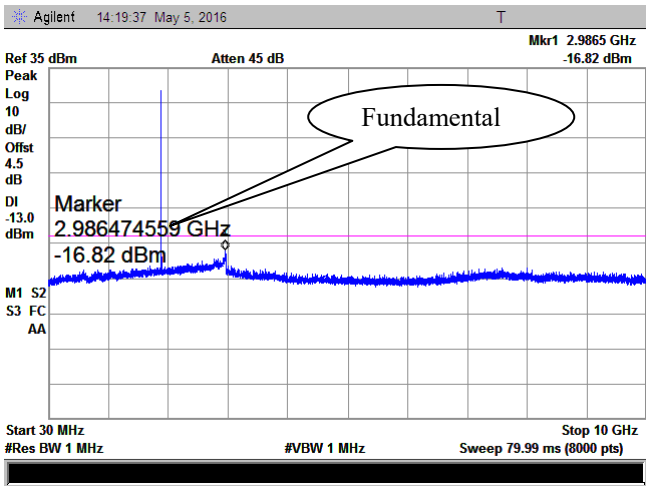
PCS 1900 - Low Channel-2



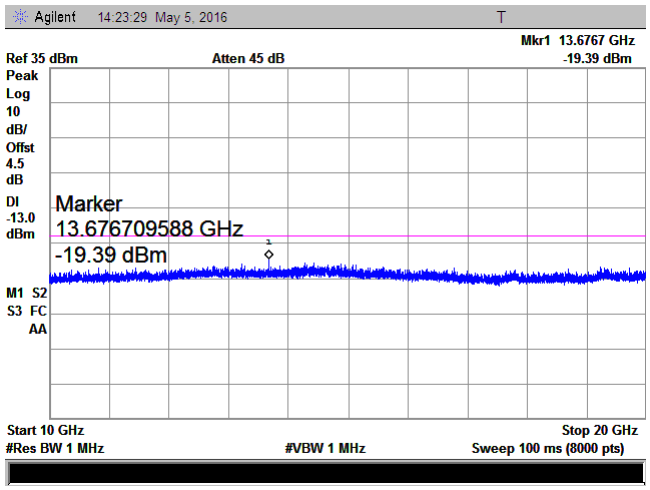
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



PCS1900 - High Channel-1

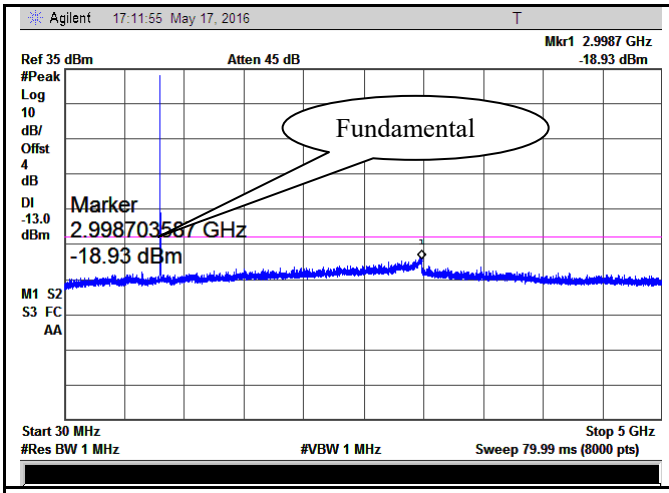


PCS 1900 - High Channel-2

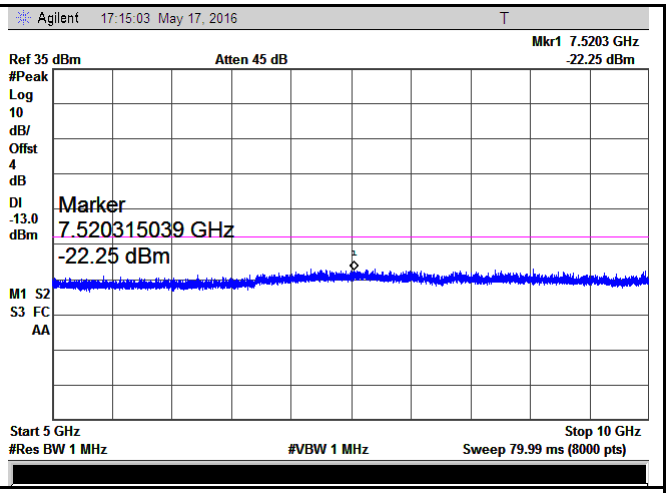
GPRS:

Test Plots

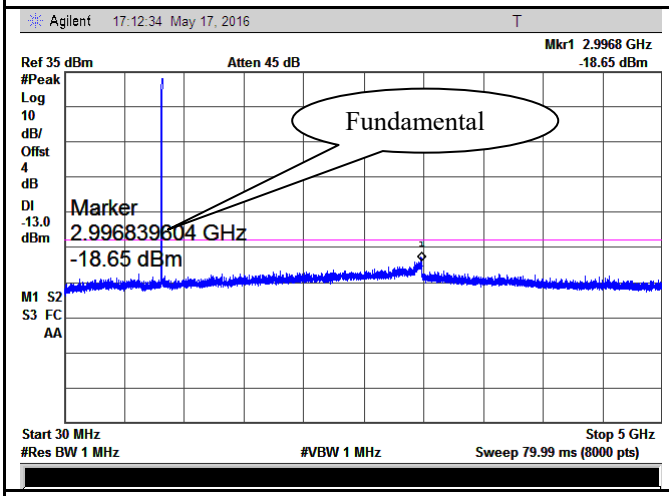
Cellular Band (Part 22H) result



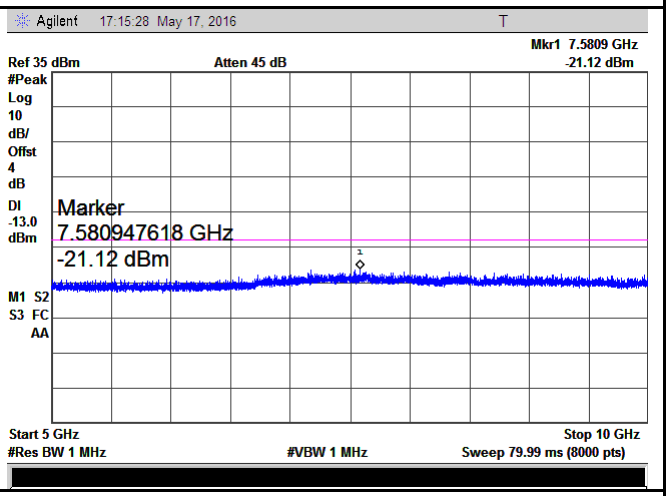
GSM 850 - Low Channel-1



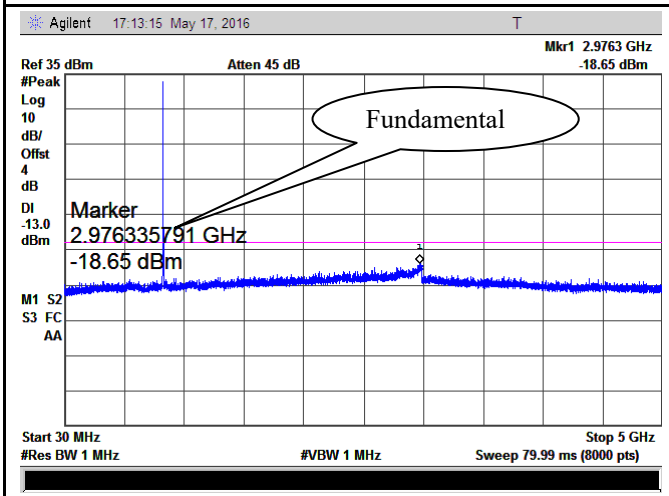
GSM 850 - Low Channel-2



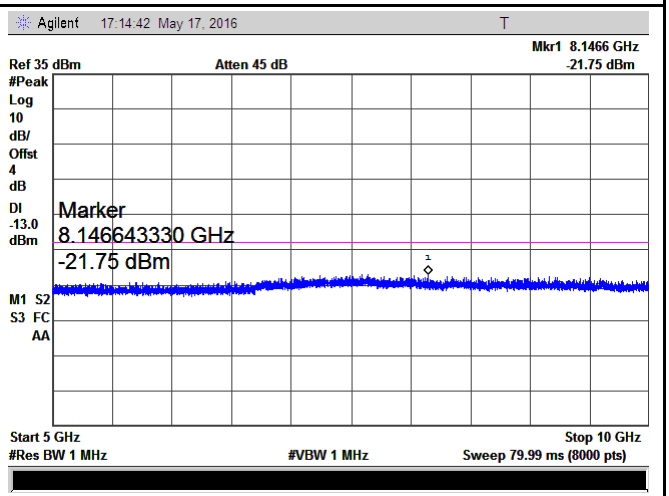
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

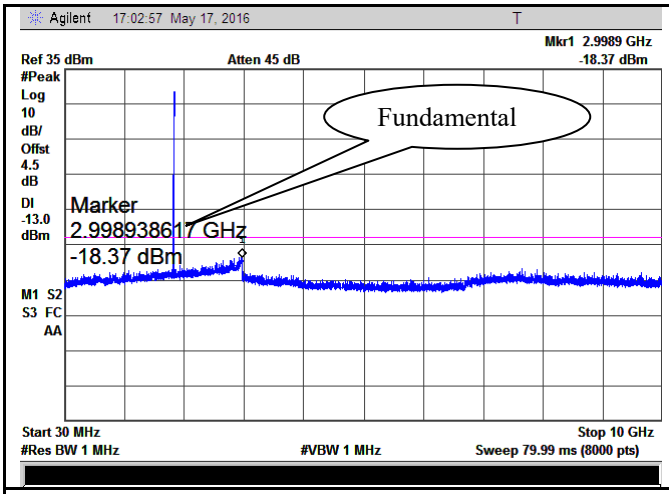


GSM 850 - High Channel-1

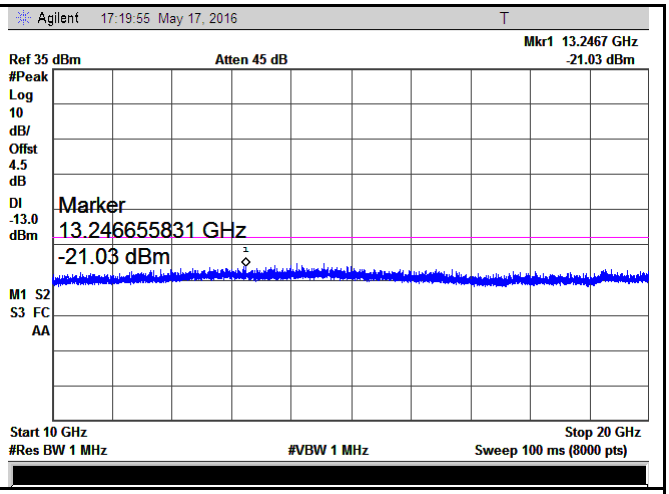


GSM 850 - High Channel-2

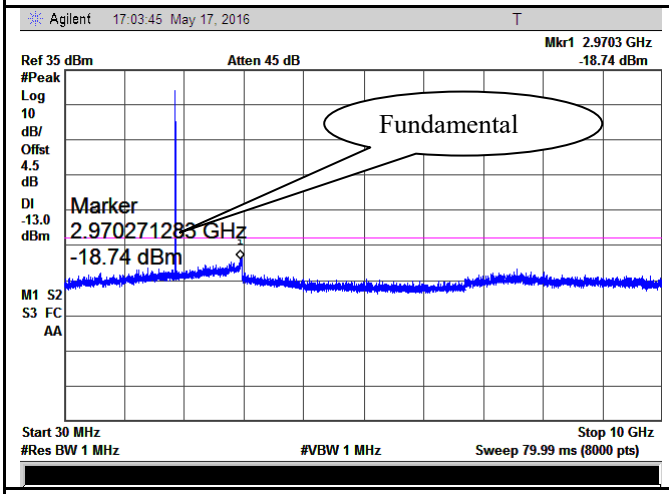
PCS Band (Part24E) result



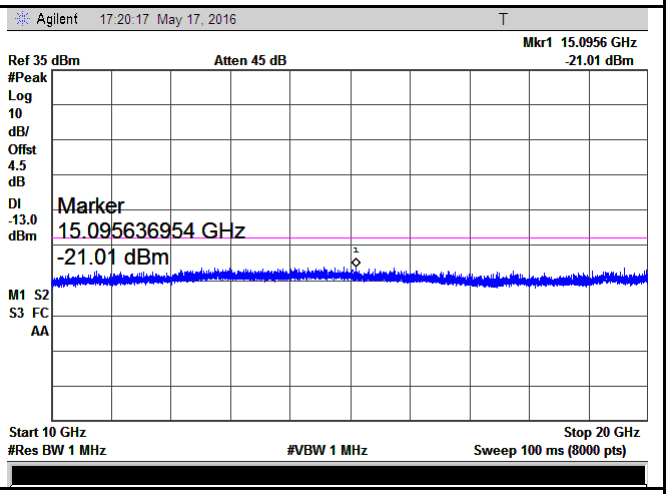
PCS1900 - Low Channel-1



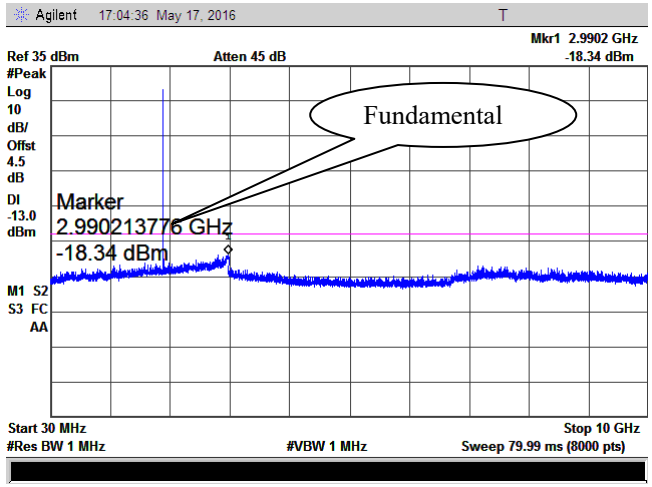
PCS 1900 - Low Channel-2



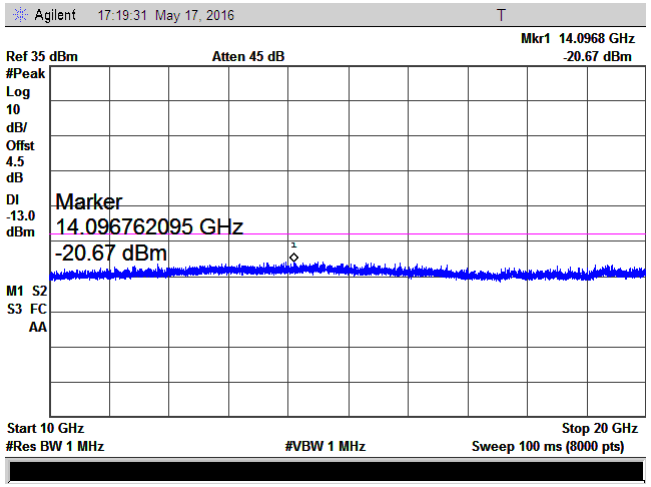
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



PCS1900 - High Channel-1

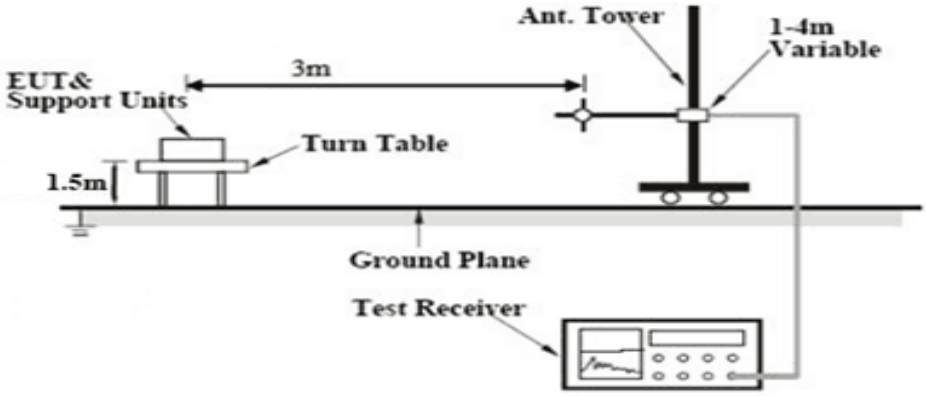


PCS 1900 - High Channel-2

6.6 Spurious Radiated Emissions

Temperature	23℃
Relative Humidity	58%
Atmospheric Pressure	1006mbar
Test date :	May 06 & May 17, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§2.1053, §22.917 & §24.238 § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.	☑
Test setup			
Test Procedure	1. The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. 2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. 3. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. Sample Calculation: EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)		
Remark			

Result	☑ Pass	☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

GSM Voice:

Cellular Band (Part 22H) result

Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1648.4	-43.38	V	7.95	0.78	-36.21	-13	-23.21
1648.4	-44.14	H	7.95	0.78	-36.97	-13	-23.97
412.5	-51.43	V	6.5	0.3	-45.23	-13	-32.23
851.6	-51.87	H	6.9	0.44	-45.41	-13	-32.41

Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1673.2	-43.45	V	7.95	0.78	-36.28	-13	-23.28
1673.2	-43.81	H	7.95	0.78	-36.64	-13	-23.64
412.8	-51.34	V	6.5	0.3	-45.14	-13	-32.14
851.1	-51.68	H	6.9	0.44	-45.22	-13	-32.22

High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1697.6	-43.61	V	7.95	0.78	-36.44	-13	-23.44
1697.6	-44.05	H	7.95	0.78	-36.88	-13	-23.88
413.6	-51.49	V	6.5	0.3	-45.29	-13	-32.29
852.4	-51.33	H	6.9	0.44	-44.87	-13	-31.87

Note:

*1, The testing has been conformed to 10*848.8MHz=8,488MHz*
2, All other emissions more than 30 dB below the limit
3.GSM voice and GPRS mode were investingated. The results above show only the worsr case.

PCS Band (Part24E) result

Low channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3700.4	-49.28	V	10.25	2.73	-41.76	-13	-28.76
3700.4	-48.43	H	10.25	2.73	-40.91	-13	-27.91
415.7	-51.84	V	6.5	0.3	-45.64	-13	-32.64
849.8	-52.36	H	6.9	0.44	-45.9	-13	-32.9

Middle channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3760	-49.17	V	10.25	2.73	-41.65	-13	-28.65
3760	-48.62	H	10.25	2.73	-41.1	-13	-28.1
414.7	-51.54	V	6.5	0.3	-45.34	-13	-32.34
850.6	-52.08	H	6.9	0.44	-45.62	-13	-32.62

High channel

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
3819.6	-49.05	V	10.36	2.73	-41.42	-13	-28.42
3819.6	-48.79	H	10.36	2.73	-41.16	-13	-28.16
413.5	-51.82	V	6.5	0.3	-45.62	-13	-32.62
852.7	-52.15	H	6.9	0.44	-45.69	-13	-32.69

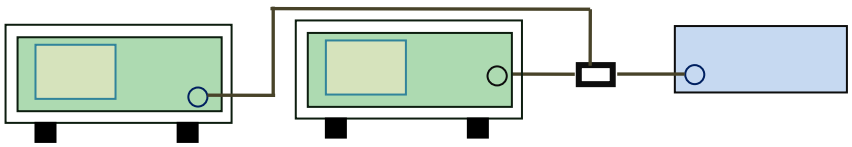
Note:

*1, The testing has been conformed to 10*1909.8MHz=19,098MHz*
2, All other emissions more than 30 dB below the limit
3.GSM voice and GPRS mode were investingated. The results above show only the worsr case.

6.7 Band Edge

Temperature	22℃
Relative Humidity	57%
Atmospheric Pressure	1005mbar
Test date :	May 05 & May 17, 2016
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§22.917(a) §24.238(a) § 27.53(h)	a)	The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.	☑
Test setup			
Procedure	- The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

GSM:

Cellular Band (Part 22H) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.9950	-20.38	-13
849.0050	-20.89	-13

PCS Band (Part24E) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.9775	-17.26	-13
1910.0200	-14.42	-13

GPRS:

Cellular Band (Part 22H) result

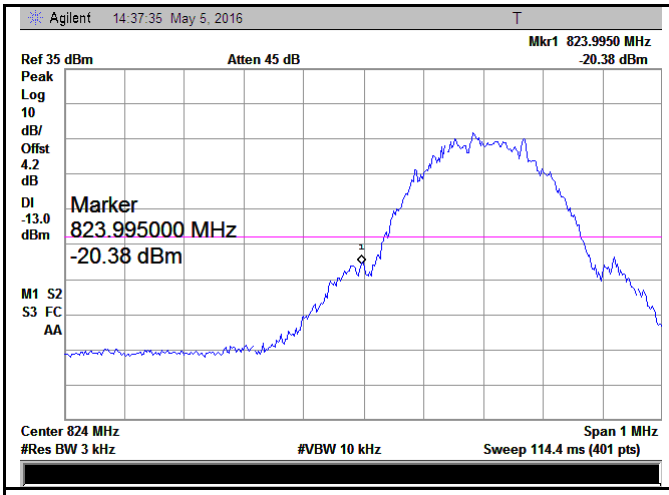
Frequency (MHz)	Emission (dBm)	Limit (dBm)
823.9960	-16.77	-13
849.0230	-17.78	-13

PCS Band (Part24E) result

Frequency (MHz)	Emission (dBm)	Limit (dBm)
1849.9750	-16.80	-13
1910.0200	-17.06	-13

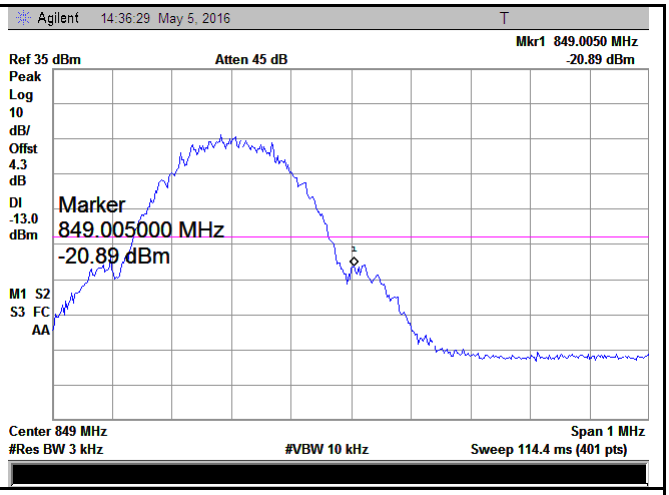
GSM:

Test Plots



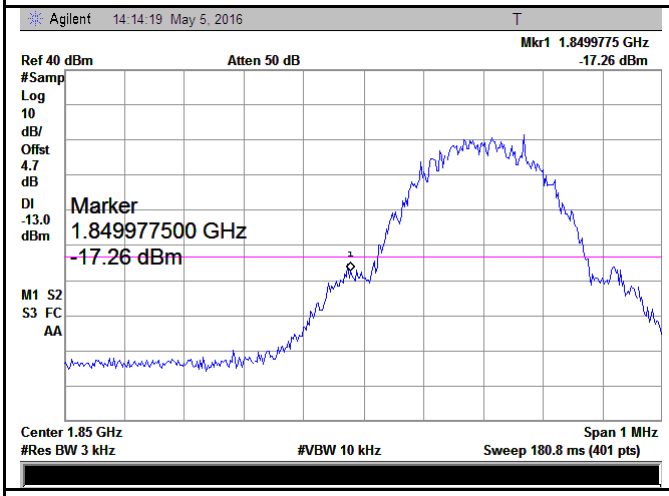
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log (3.14/3)=4.0+0.2=4.2dB



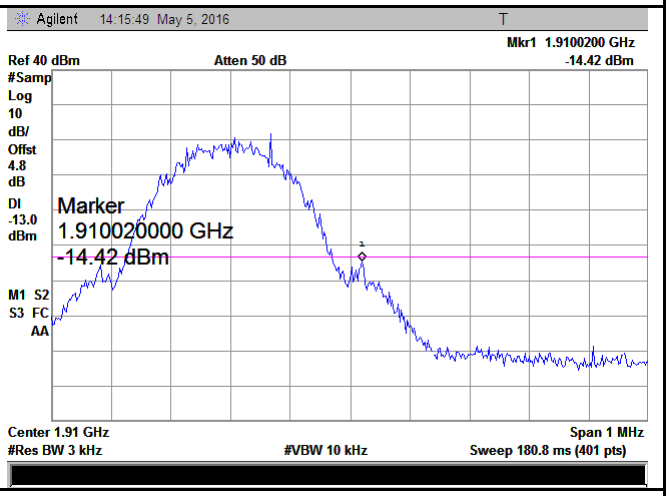
Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log (3.19/3)=4.0+0.3=4.3dB



PCS Band - Low Channel

Note: Offset=Cable loss (4.5) + 10log (3.13/3)=4.5+0.2=4.7dB

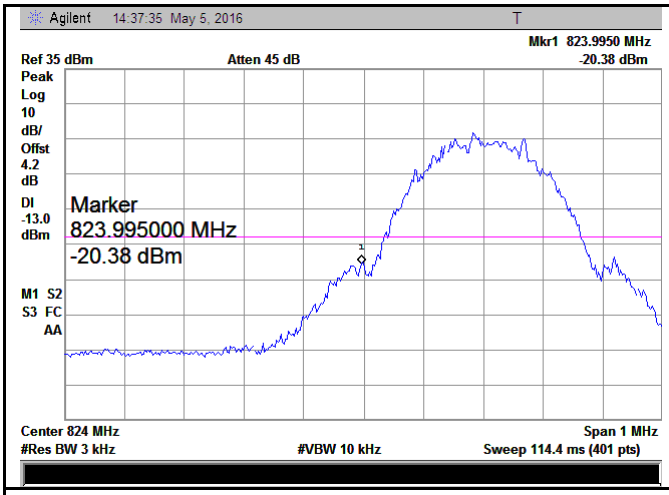


PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log (3.22/3)=4.5+0.3=4.8dB

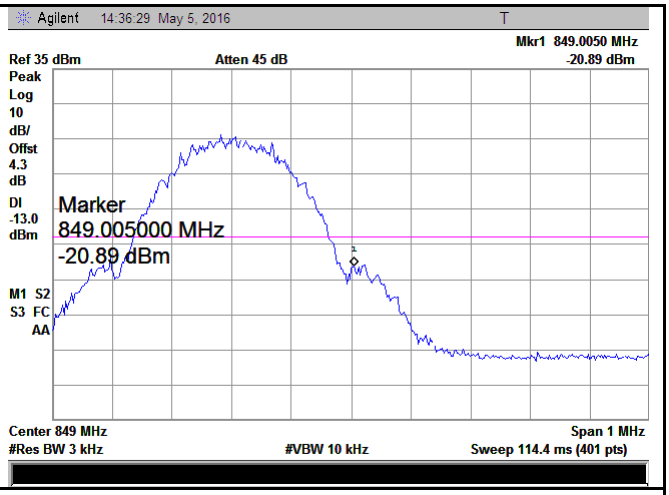
GPRS:

Test Plots



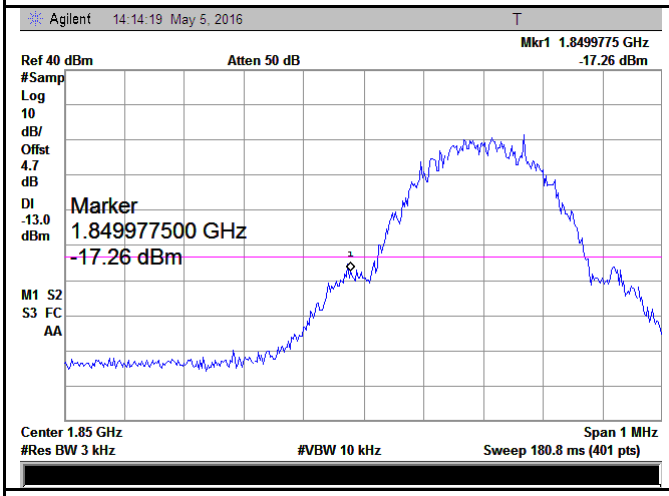
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log (3.14/3)=4.0+0.2=4.2dB



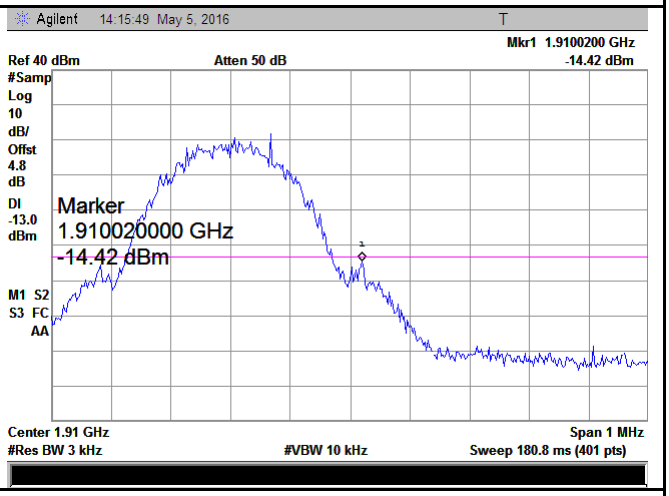
Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log (3.10/3)=4.0+0.3=4.3dB



PCS Band - Low Channel

Note: Offset=Cable loss (4.5) + 10log (3.17/3)=4.5+0.2=4.7dB



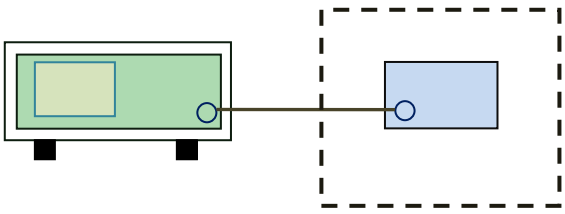
PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log (3.17/3)=4.5+0.3=4.8dB

6.8 Frequency Stability

Temperature	23℃
Relative Humidity	58%
Atmospheric Pressure	1006mbar
Test date :	May 06 & May17, 2016
Tested By :	Winnie Zhang

Requirement(s):

<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>§2.1055, §22.355 & §24.235 § 27.5(h); § 27.54</td><td>a)</td><td>According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:
Frequency Tolerance for Transmitters in the Public Mobile Services
<table>
<tr><th>Frequency Range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile ≤ 3 watts (ppm)</th><th>Mobile ≤ 3 watts (ppm)</th></tr>
<tr><td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr>
<tr><td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr>
<tr><td>45 to 512</td><td>2.5</td><td>5.0</td><td>.0</td></tr>
<tr><td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr>
<tr><td>928 to 29.</td><td>5.0</td><td>N/A</td><td>N/A</td></tr>
<tr><td>929 to 960.</td><td>1.5</td><td>N/A</td><td>N/A</td></tr>
<tr><td>2110 to 2220</td><td>10.0</td><td>N/A</td><td>N/A</td></tr>
</table>
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.</td><td>☑</td></tr>
<tr><td>Test setup</td><td colspan="3">  </td></tr>
</table>

Procedure	A communication link was established between EUT and base station. The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage. Limit: The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

GSM:

Cellular Band (Part 22H) result

Middle Channel, f_o = 836.6 MHz				
Temperature (℃)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	15	0.0179	2.5
0		13	0.0155	2.5
10		11	0.0131	2.5
20		9	0.0108	2.5
30		11	0.0131	2.5
40		12	0.0143	2.5
50		14	0.0167	2.5
55		18	0.0215	2.5
25	4.2	11	0.0131	2.5
	3.5	10	0.0120	2.5

PCS Band (Part 24E) result

Middle Channel, f_o = 1880 MHz				
Temperature (℃)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	17	0.0090	2.5
0		15	0.0080	2.5
10		11	0.0059	2.5
20		9	0.0048	2.5
30		11	0.0059	2.5
40		13	0.0069	2.5
50		14	0.0074	2.5
55		16	0.0085	2.5
25	4.2	12	0.0064	2.5
	3.5	14	0.0074	2.5

GPRS:

Cellular Band (Part 22H) result

Middle Channel, f_o = 836.6 MHz				
Temperature (℃)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	16	0.0191	2.5
0		18	0.0215	2.5
10		19	0.0227	2.5
20		21	0.0251	2.5
30		17	0.0203	2.5
40		15	0.0179	2.5
50		13	0.0155	2.5
55		28	0.0335	2.5
25	4.2	24	0.0287	2.5
	3.5	26	0.0311	2.5

PCS Band (Part 24E) result

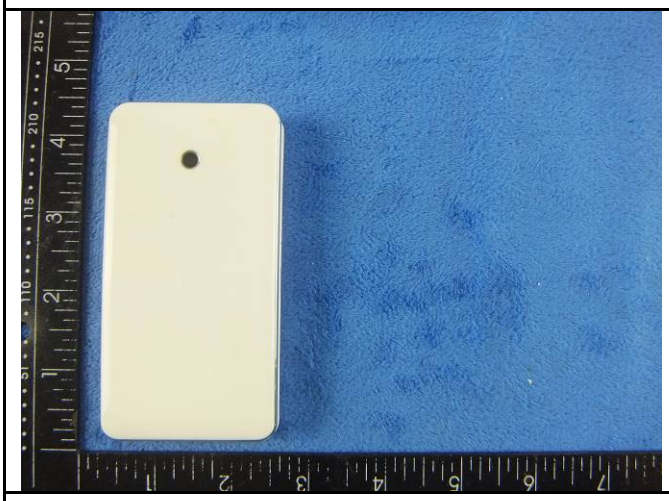
Middle Channel, f_o = 1880 MHz				
Temperature (℃)	Power Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	24	0.0128	2.5
0		23	0.0122	2.5
10		21	0.0112	2.5
20		17	0.0090	2.5
30		15	0.0080	2.5
40		13	0.0069	2.5
50		16	0.0085	2.5
55		20	0.0106	2.5
25	4.2	21	0.0112	2.5
	3.5	25	0.0133	2.5

Annex A. TEST INSTRUMENT

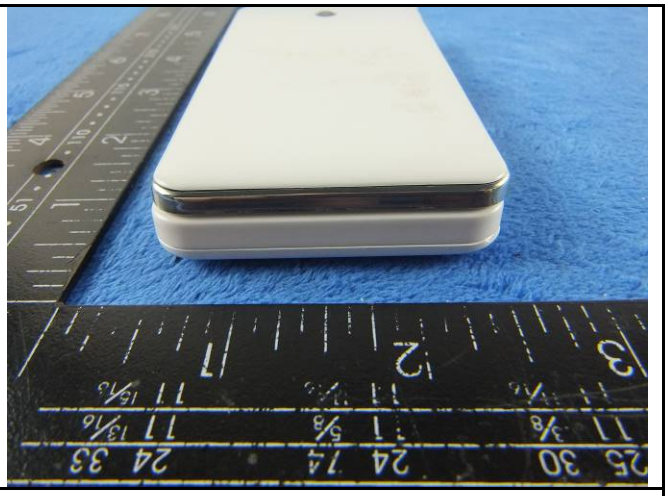
Instrument	Model	Serial #	Cal Date	Cal Due	In use
RF Conducted Test					
Agilent ESA-E SERIES SPECTRUM ANALYZER	E4407B	MY45108319	09/16/2015	09/15/2016	☑
Power Splitter	1#	1#	09/01/2015	08/31/2016	☑
Universal Radio Communication Tester	CMU200	121393	09/25/2015	09/24/2016	☑
Temperature/Humidity Chamber	UHL-270	001	10/09/2015	10/08/2016	☑
DC Power Supply	E3640A	MY40004013	09/17/2015	09/16/2016	☑
Radiated Emissions					
EMI test receiver	ESL6	100262	09/17/2015	09/16/2016	☑
OPT 010 AMPLIFIER (0.1-1300MHz)	8447E	2727A02430	09/01/2015	08/31/2016	☑
Microwave Preamplifier (1 ~ 26.5GHz)	8449B	3008A02402	03/24/2016	03/23/2017	☑
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/21/2015	09/20/2016	☑
Bilog Antenna (30MHz~2GHz)	JB1	A112017	09/21/2015	09/20/2016	☑
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71259	09/24/2015	09/23/2016	☑
Double Ridge Horn Antenna (1 ~18GHz)	AH-118	71283	09/24/2015	09/23/2016	☑
SYNTHESIZED SIGNAL GENERATOR	8665B	3744A01293	09/17/2015	09/16/2016	☑
Tunable Notch Filter	3NF-800/1000-S	AA4	09/01/2015	08/31/2016	☑
Tunable Notch Filter	3NF-1000/2000-S	AM 4	09/01/2015	08/31/2016	☑

Annex B. EUT And Test Setup Photographs

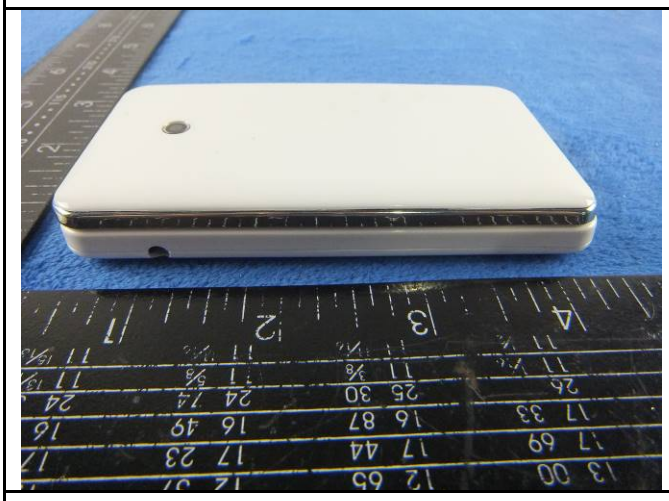
Annex B.i. Photograph: EUT External Photo

	
Whole Package View	Adapter - Front View
	
EUT - Front View	EUT - Rear View

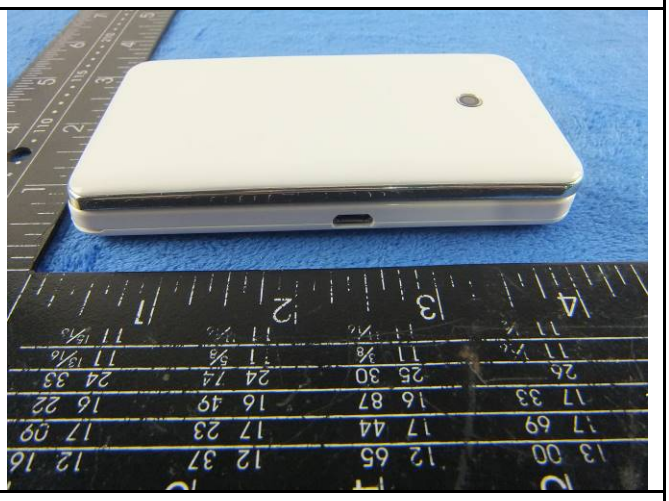
EUT - Top View



EUT - Bottom View



EUT - Left View



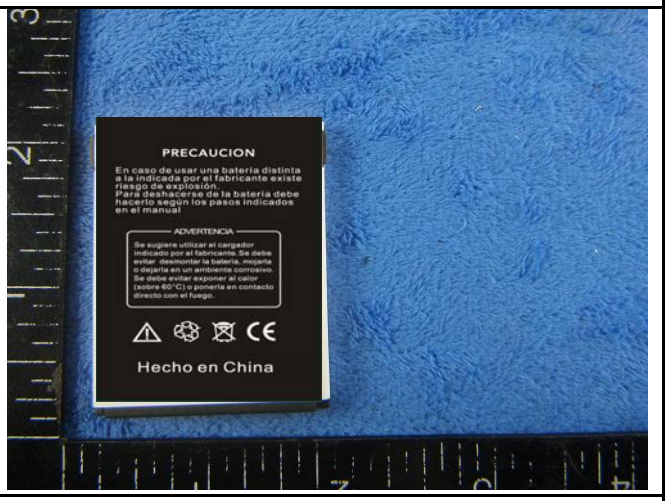
EUT - Right View

Annex B.ii. Photograph: EUT Internal Photo

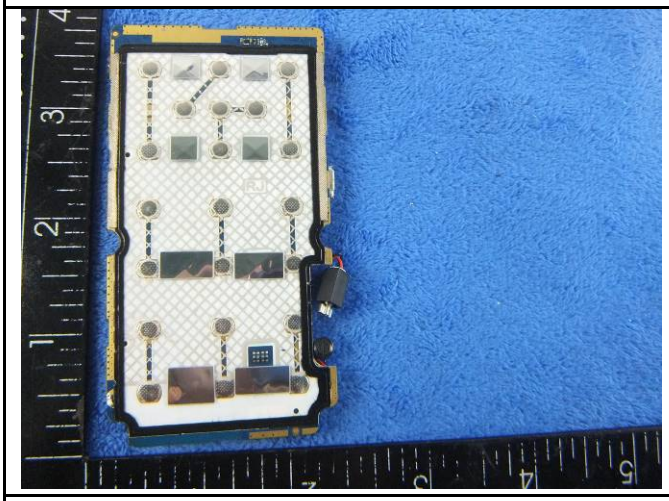
Cover Off - Top View 1

Cover Off - Top View 2

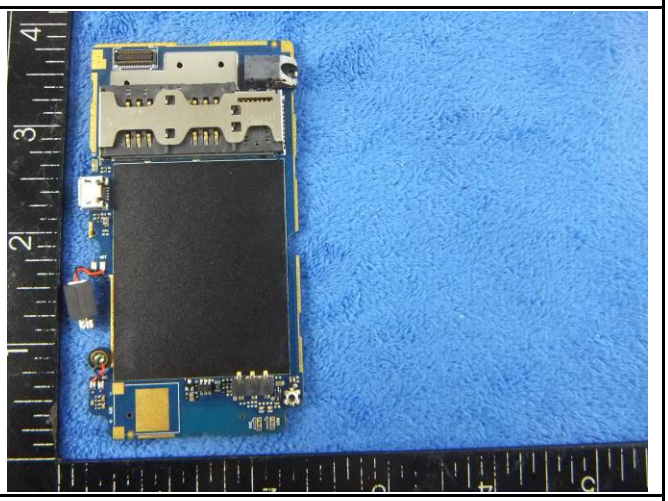
Battery - Front View



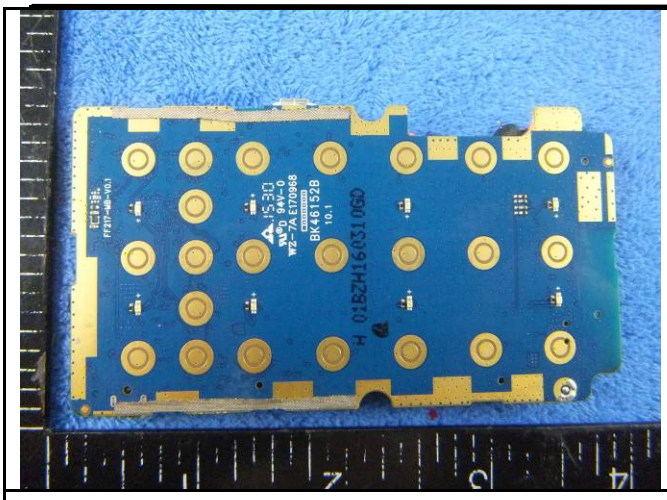
Battery - Rear View



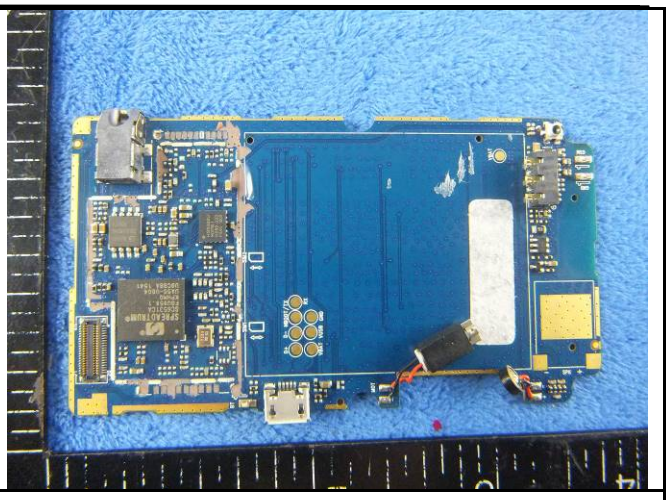
Mainboard with Shielding - Front View



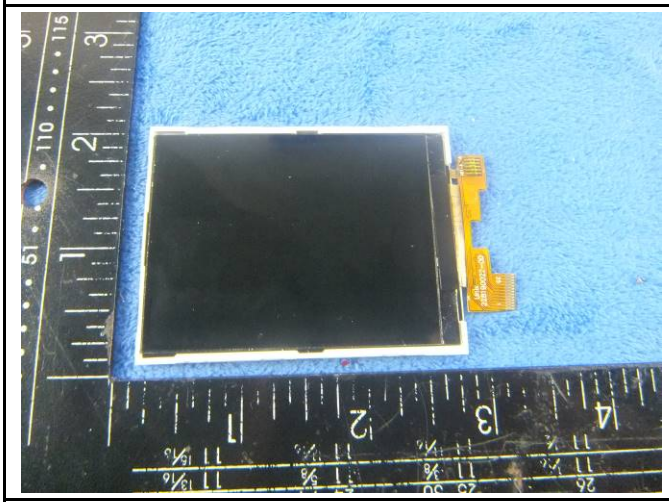
Mainboard with Shielding - Rear View



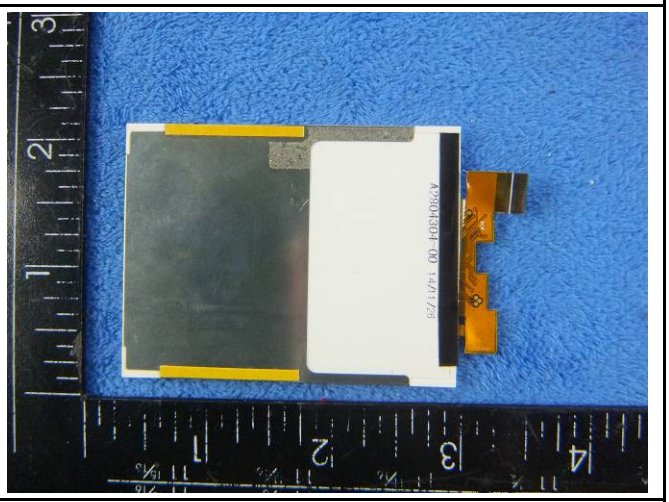
Mainboard without Shielding - Front View



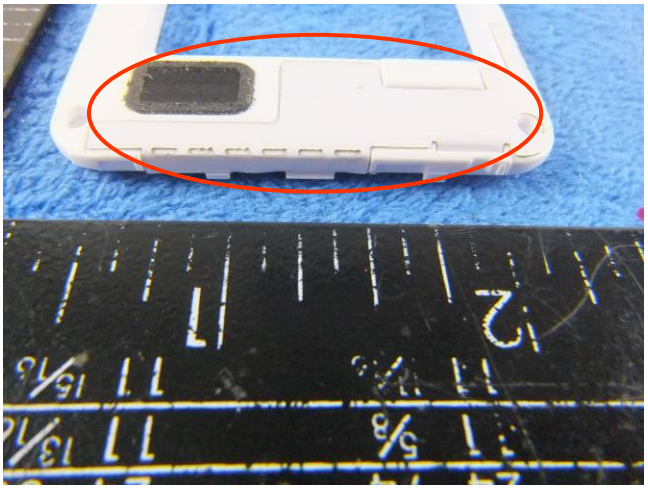
Mainboard without Shielding – Rear View



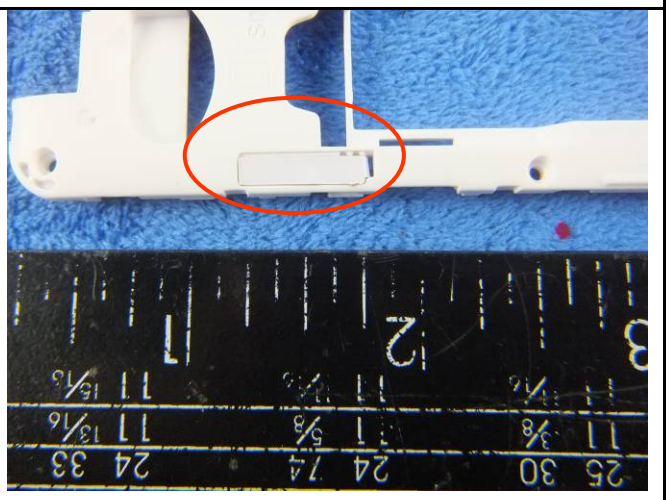
LCD – Front View



LCD – Rear View

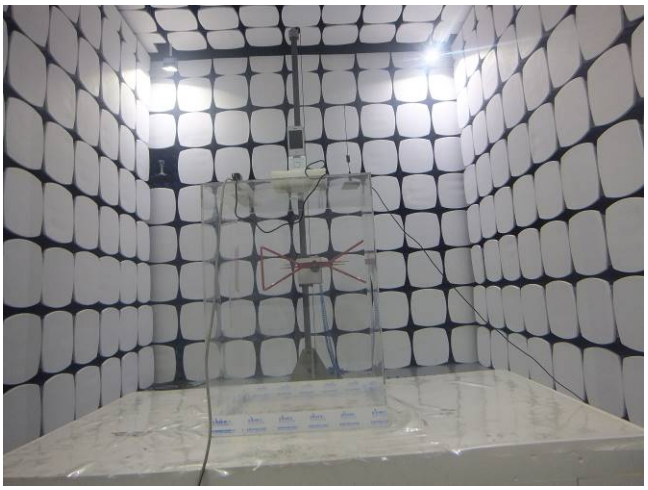
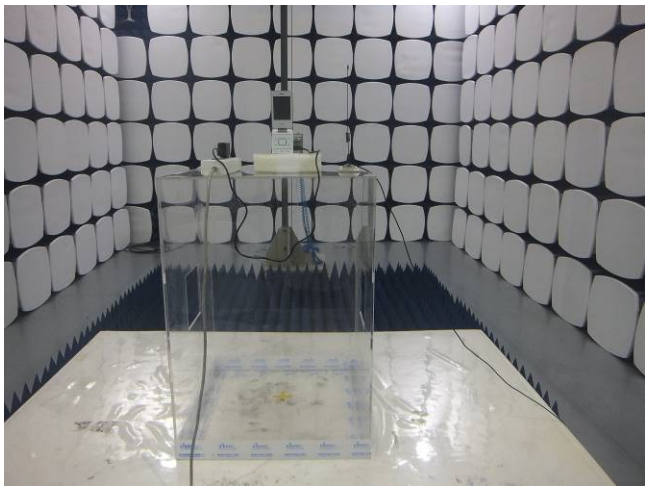


GSM/PCS- Antenna View



BT - Antenna View

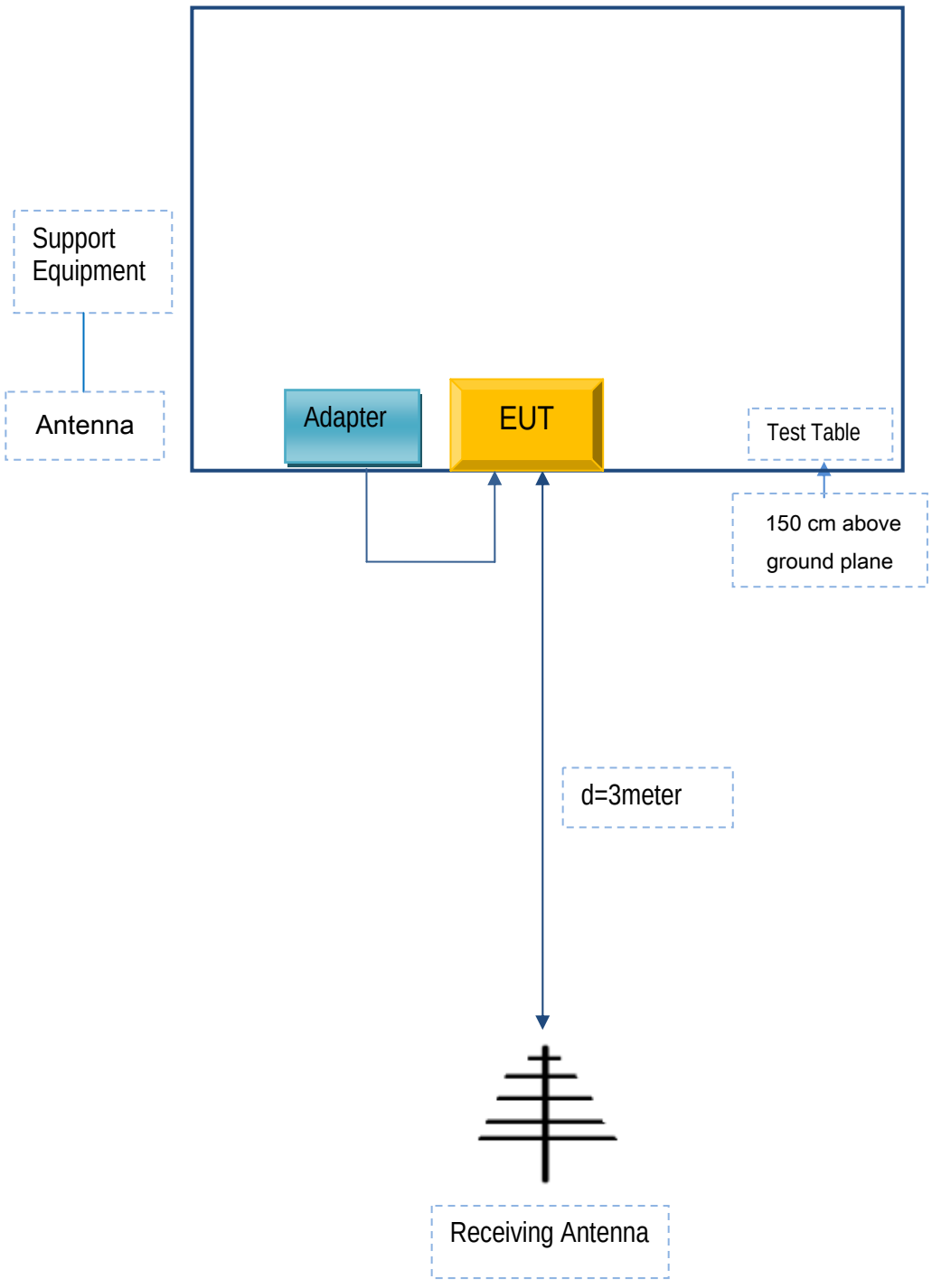
Annex B.iii. Photograph: Test Setup Photo

	
Radiated Spurious Emissions Test Setup Below 1GHz	Radiated Spurious Emissions Test Setup Above 1GHz

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions



Annex C. il. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

Manufacturer	Equipment Description	Model	Serial No
NEG TECHNOLOGY CO., LIMITED	Adapter	F1022	M-0103

Supporting Cable:

Cable type	Shield Type	Ferrite Core	Length	Serial No
USB Cable	Un-shielding	No	0.8m	M-0103

Annex C.ii. EUT OPERATING CONKITIONS

N/A

Annex D. User Manual / Block Diagram / Schematics / Partlist

N/A

Annex E. DECLARATION OF SIMILARITY

N/A