

# Test Report

FCC ID :2AMKU-DK66

Date of issue: Jun. 16, 2017

Report Number: MTi170621E131

Sample Description: Rugged Smartphone

Model(s): DK66

Applicant: Shenzhen Gomtel Science & Technology Co., Ltd.

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Beihuan Road, Nanshan, Shenzhen, China

Date of Test: May. 26, 2017 to Jun. 16, 2017

Shenzhen Microtest Co., Ltd.  
<http://www.mtitest.com>



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<b>TEST RESULT CERTIFICATION</b>	
<b>Applicant's name .....</b>	<b>Shenzhen Gomtel Science &amp; Technology Co., Ltd.</b>
Address .....	5th Floor, Sector B, Fuhua Technology Building No.9116 Beihuan Road, Nanshan, Shenzhen, China
<b>Manufacture's Name .....</b>	<b>Shenzhen Gomtel Science &amp; Technology Co., Ltd.</b>
Address .....	5th Floor, Sector B, Fuhua Technology Building No.9116 Beihuan Road, Nanshan, Shenzhen, China
<b>Product description</b>	
Product name .....	Rugged Smartphone
Model and/or type reference	DK66
Serial Model.....	DK66plus, DK6x series (X is arabic number), WF68
<b>Standards .....</b>	<b>FCC Part22 &amp; FCC P24</b>
Test procedure.....	TIA-603-D

Tested by:



Ace Chai

Jun. 15, 2017

Reviewed by:



Smith Chen

Jun. 16, 2017

Approved by:



Tom Xue

Jun. 16, 2017

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Description of Test Item	Standard	Results
Conducted Output power	FCC PART 2: 2.1046 FCC PART 22H: 22.913 (a) FCC PART 24E: 24.232 (c)	PASS
Radiated Output power(erp/eirp)	FCC PART 22H:22.913 (a) FCC PART 24E:24.232(c)	PASS
Occupied bandwidth	FCC PART 2: 2.1049 FCC PART 22H: 22.917 (b) FCC PART 24E: 24.238 (b)	PASS
Frequency stability	FCC PART 2: 2.1055 FCC PART 22H: 22.355 FCC PART 24E: 24.235	PASS
Conducted spurious emission (Antenna terminal)	FCC PART 2: 2.1051 FCC PART 22H: 22.917 FCC PART 24E: 24.238	PASS
Radiated spurious emissions	FCC PART 2: 2.1053 FCC PART 22H: 22.917 FCC PART 24E: 24.238	PASS
Band edge compliance	FCC PART 22H: 22.917 (b) FCC PART 24E: 24.238 (b)	PASS
Power Line Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.4: 2014	PASS

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

## 1.1 TEST FACILITY

Shenzhen Toby Technology Co., Ltd.

Add.: 10/F.,A Block,Jiada R&D Bldg.,No.5 Songpingshan, Road, Science&Technology Park,

Shenzhen, 518057

FCC Registration No.:811562

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$  , 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	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^\circ\text{C}$
7	Humidity	$\pm 2\%$

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Rugged Smartphone	
Trade Name	DuraMobi	
Model Name	DK66	
Serial Model	DK66plus, DK6x series (X is arabic number), WF68	
Model Difference	N/A	
Product Description	The EUT is a Rugged Smartphone	
	Operation Frequency:	GSM 850/GSM1900
	Modulation Type:	GMSK, 8PSK
	Antenna Designation:	Please see Note 3.
	Output Power(Conducted):	32.76dBm
	Antenna Gain (dBi)	-1.12dbi
Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.		
Channel List	Please refer to the Note 2.	
Adapter	Model: UT-133E- 5200ZY AC Power Input: 100-240V~50/60Hz 0.3A MAX Output :5V DC, 2000mA	
Battery	Model:EU955164PV 3.8V 4600mAh	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Test Mode

Mode	Channel	Frequency(MHz)
GSM 850	128	824.2
	190	836.6
	251	848.8
PCS 1900	512	1850.2
	661	1880.0
	810	1909.8

3. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	Integrated antenna	-	-1.12dbi	GSM Antenna

## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	GSM 850, GMSK modulation
Mode 2	GSM 850, 8PSK modulation
Mode 3	GSM1900, GMSK modulation
Mode 4	GSM1900, 8PSK modulation
Mode 5	Link Mode

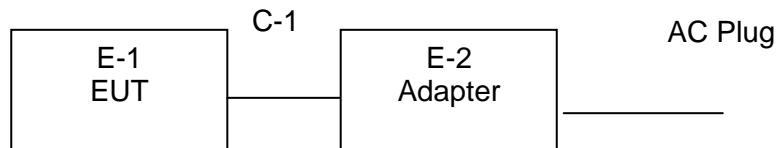
For Conducted Emission	
Final Test Mode	Description
Mode5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1/2	GSM850
Mode 3/4	GSM1900

Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



## 2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	Rugged Smartphone	DragonKing	DK66	N/A	EUT
E-2	Adapter	N/A	UT-133E- 5200ZY	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0m	
C-2	NO	NO	0.8m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

For RF conducted test:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Signal Analyzer	Agilent	N9010A	MY48030494	2017/11/4
4 Ch. Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063513	2017/11/4
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54080019	2017/11/4
vector Signal Generator	Agilent	E4438C	US44271917	2017/11/4
vector Signal Generator	Agilent	E4438C	MY49070163	2017/11/4
Dc Power Supply	GW	GPR-6030D	/	2017/11/4
Temperature & Humidity Chamber	GIANT FORCE	GTH-056P	GF-94454-1	2017/11/4
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	120909	2017/11/4

For Radiated test:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Broadband TRILOG Antenna	Schwarabeck	VULB9163	9163-872	2017/11/14
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1145	2017/11/14
Amplifier	HP	8447D	3113A06150	2017/11/4
Amplifier	Agilent	8449B	3008A02400	2017/7/4
Test Receiver	Schwarabeck	ESPI7	100314	2017/11/4
Spectrum analyzer	Agilent	E4407B	MY41441082	2017/11/4
Signal Generator	R&S	SMT 06	832080/007	2017/11/4

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

### 3. CONDUCTED OUTPUT POWER

#### 3.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.913 (a)	Conducted Output power	38.5dBm(ERP) for GSM850	
24.232 (c)		33dBm for GSM1900	PASS

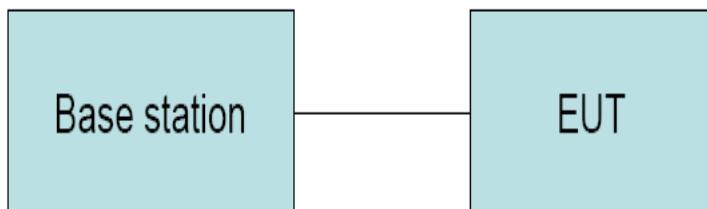
##### 3.1.1 TEST PROCEDURE

- (1) The EUT's RF output port was connected to base station.
- (2) A call is set up by the SS according to the generic call set up procedure
- (3) Set EUT at maximum power level through base station by power level command
- (4) Measure the maximum output power of EUT at each frequency band and mode by base station.

##### 3.1.2 DEVIATION FROM STANDARD

No deviation.

##### 3.1.3 TEST SETUP



##### 3.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.1.5 TEST RESULTS

EUT :	Rugged Smartphone	Model Name :	DK66
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	GSM850/GSM1900		

Mode	Channel	PK Output Power(dBm)	Limit	
			ERP(dBm)	EIRP(dBm)
GSM 850 TM1	128	32.76	38.5	/
	190	32.67	38.5	/
	251	32.56	38.5	/
GSM 850 TM2	128	26.45	38.5	/
	190	26.67	38.5	/
	251	26.49	38.5	/
GSM1900TM1	512	29.51	/	33
	661	29.68	/	33
	810	29.65	/	33
GSM1900 TM2	512	25.42	/	33
	661	25.39	/	33
	810	25.43	/	33

## 4. RADIATED OUTPUT POWER

### 4.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.913 (a)	Conducted Output power	38.5dBm(ERP) for GSM850	PASS
24.232 (c)		33dBm for GSM1900	

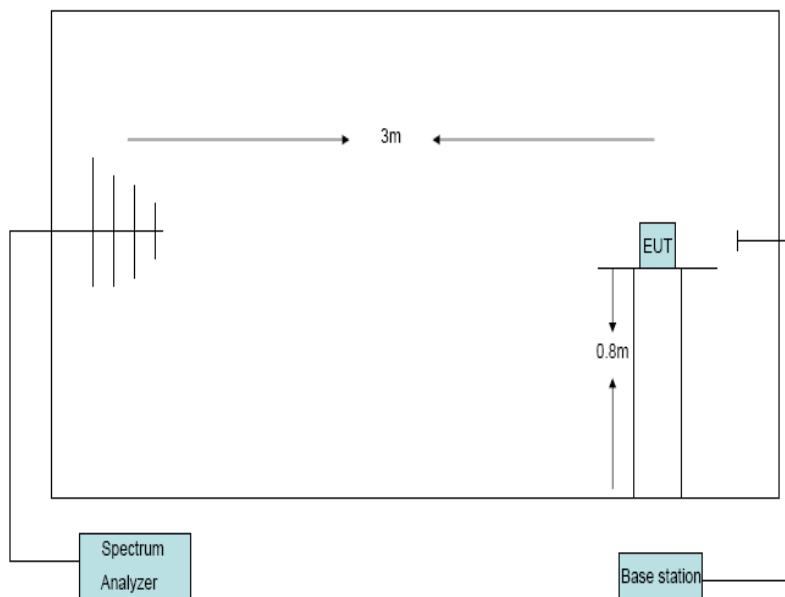
#### 4.1.1 TEST PROCEDURE

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 3MHz, VBW= 3MHz and peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest 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
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency below 1GHz) or Horn antenna(for frequency above 1GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn 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 - Substitution antenna Loss(only for Dipole antenna) - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor,  $EIRP = LVL + \text{Correction factor}$  and  $ERP = EIRP - 2.15$

#### 4.1.2 DEVIATION FROM STANDARD

No deviation.

### 4.1.3 TEST SETUP



### 4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 4.1.5 TEST RESULTS

EUT :	Rugged Smartphone	Model Name :	DK66
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	GSM850/GSM1900		

Mode	Channel	LVL (dBm)	Correction factor(dB)	ERP (dBm)	EIRP (dBm)	Limit	
						ERP(dBm)	EIRP(dBm)
GSM 850 TM1	128	2.2	22.27	24.47	/	38.5	/
	190	2.3	26.28	28.58	/	38.5	/
	251	2.2	26.31	28.51	/	38.5	/
GSM 850 TM2	128	2.5	26.27	28.77	/	38.5	/
	190	2.6	26.28	28.88	/	38.5	/
	251	2.7	26.31	29.01	/	38.5	/
GSM1900 TM1	512	1.9	22.58	/	24.48	/	33
	661	1.6	22.6	/	24.2	/	33
	810	1.7	22.62	/	24.32	/	33
GSM1900 TM2	512	1.5	22.58	/	24.08	/	33
	661	1.6	22.6	/	24.2	/	33
	810	1.4	22.62	/	24.02	/	33

Note: EIRP=LVL+Correction factor

## 5. OCCUPY BANDWIDTH

### 5.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917 (b) 24.238 (b)	Occupied bandwidth	/	PASS

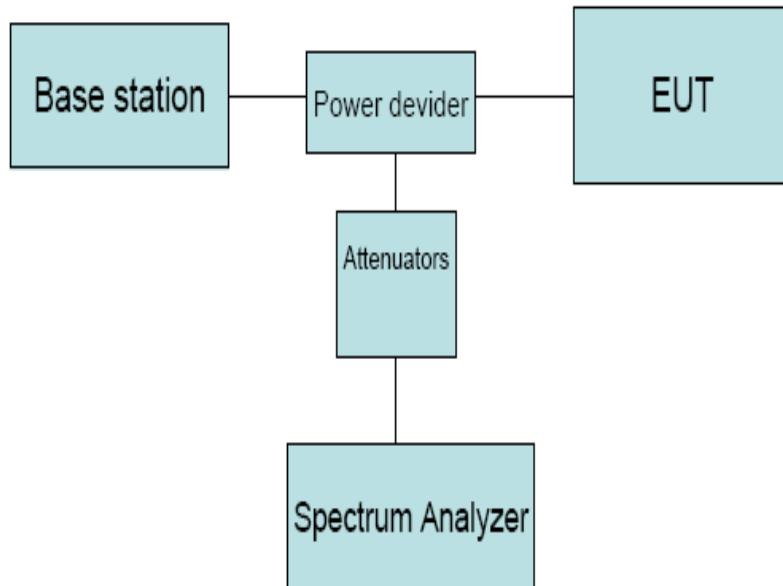
#### 5.1.1 TEST PROCEDURE

1. The EUT' RF output port was connected to Spectrum Analyzer and Base Station via power divider.
2. Spectrum analyzer's occupied bandwidth measure function was used to measure 99% bandwidth and -26dBc bandwidth

#### 5.1.2 DEVIATION FROM STANDARD

No deviation.

#### 5.1.3 TEST SETUP



#### 5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

### 5.1.5 TEST RESULTS

EUT :	Rugged Smartphone	Model Name :	DK66
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	GSM 850/GSM 1900		

Mode	Channel	-26dBc bandwidth (KHz)	Limit
GSM 850 TM1	128	325.06	/
	190	319.54	/
	251	320.05	/
GSM1900 TM1	512	323.32	/
	661	315.92	/
	810	323.75	/

Note: All mode has been tested, only worst data shown in this report.

#### GSM 850 CH128



GSM 850 CH190



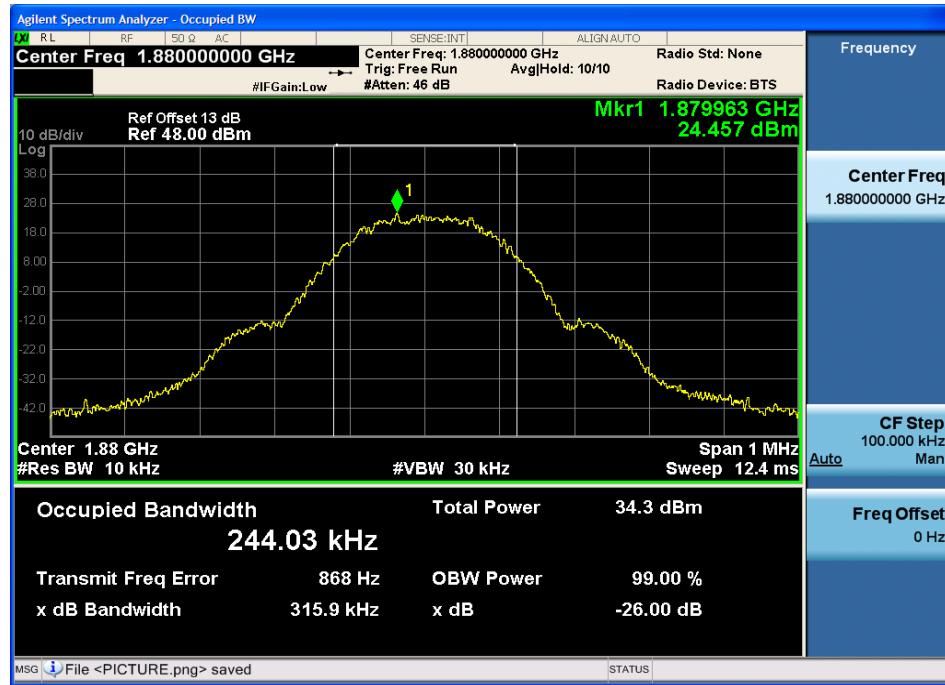
GSM 850 CH251



PCS 1900 CH512



PCS 1900 CH661



PCS 1900 CH810



## 6. FREQUENCY STABILITY

### 6.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.355 24.235	Frequency stability	± 2.5 ppm	PASS

#### 6.1.1 TEST PROCEDURE

##### Test Procedures for Temperature Variation:

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -10°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 45°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.
4. If the EUT can not be turned on at -10°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

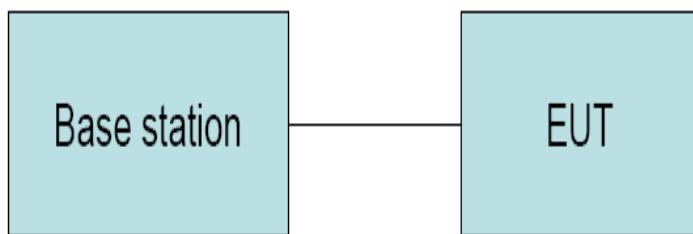
##### Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at  $25\pm5^\circ\text{C}$  and connected with the base station.
2. The power supply voltage to the EUT was varied from DC 5V to 3.5V
3. The variation in frequency was measured for the worst case.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### 6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

### 6.1.5 TEST RESULTS

EUT :	Rugged Smartphone	Model Name :	DK66
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	GSM 850/GSM 1900		

Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
GSM 850 CH 190	4.2	17.67	0.02
	3.7	-18.28	-0.02
	3.5	15.31	0.02
PCS 1900 CH661	4.2	-26.28	-0.01
	3.7	36.18	0.02
	3.5	-29.57	-0.02

Note: All mode has been tested, only worst data shown in this report.

Frequency VS Temperature

Mode	Temperature (°C)	Frequency error (Hz)	frequency error (ppm)
GSM 850 CH190	-30	18.45	0.02
	-20	19.24	0.02
	-10	17.96	0.02
	0	21.45	0.02
	10	-15.77	-0.02
	20	18.54	0.02
	30	-12.27	-0.02
	40	-13.29	-0.02
	50	-21.32	-0.01
PCS 1900 CH661	-30	36.32	0.02
	-20	23.25	0.01
	-10	28.76	0.02
	0	37.24	0.02
	10	-24.77	-0.01
	20	31.42	0.02
	30	-24.35	-0.01
	40	21.21	0.02
	50	-16.29	-0.02

## 7. CONDUCTED SPURIOUS EMISSIONS

### 7.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917	Conducted spurious emissions	-13dBm	
24.238			PASS

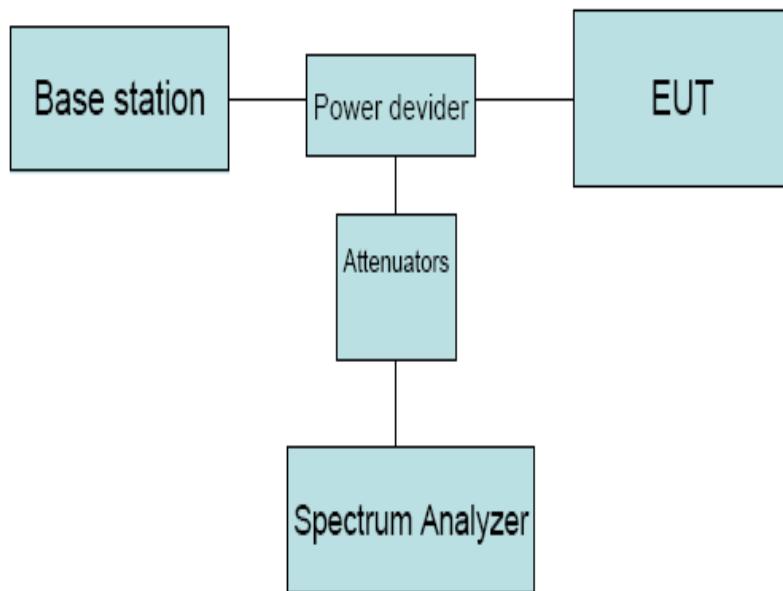
#### 7.1.1 TEST PROCEDURE

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The low, middle and high channels of each band and mode's spurious emissions for 30MHz to 10th Harmonic were measured by Spectrum analyzer.

#### 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP



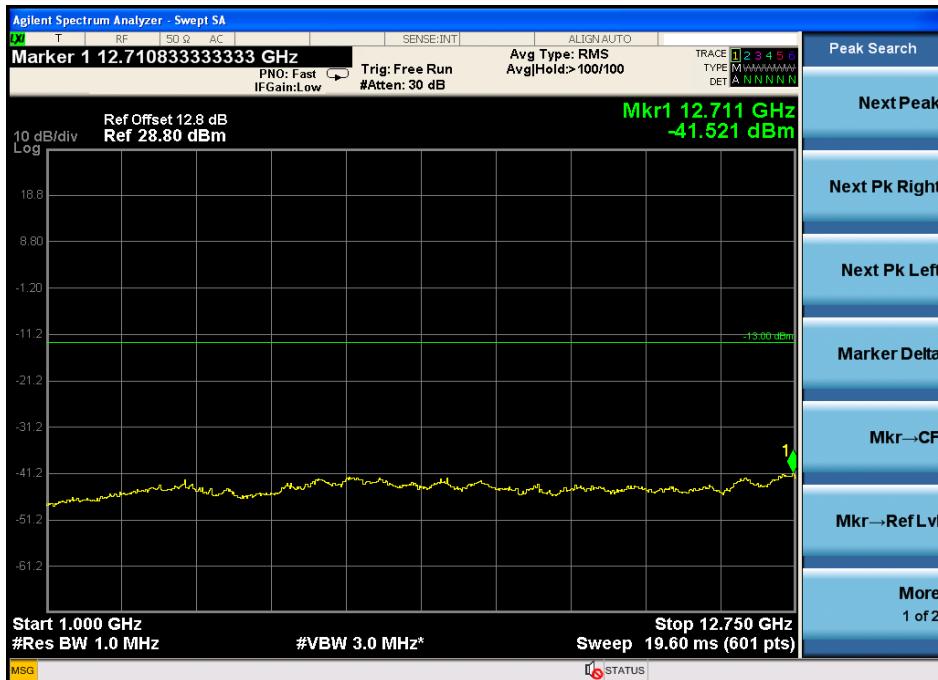
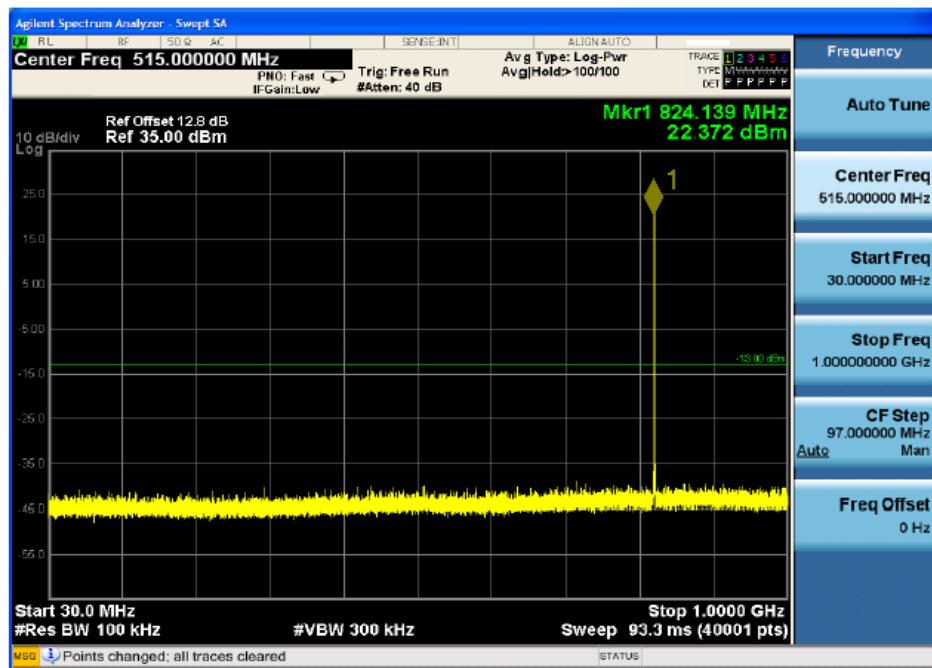
#### 7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

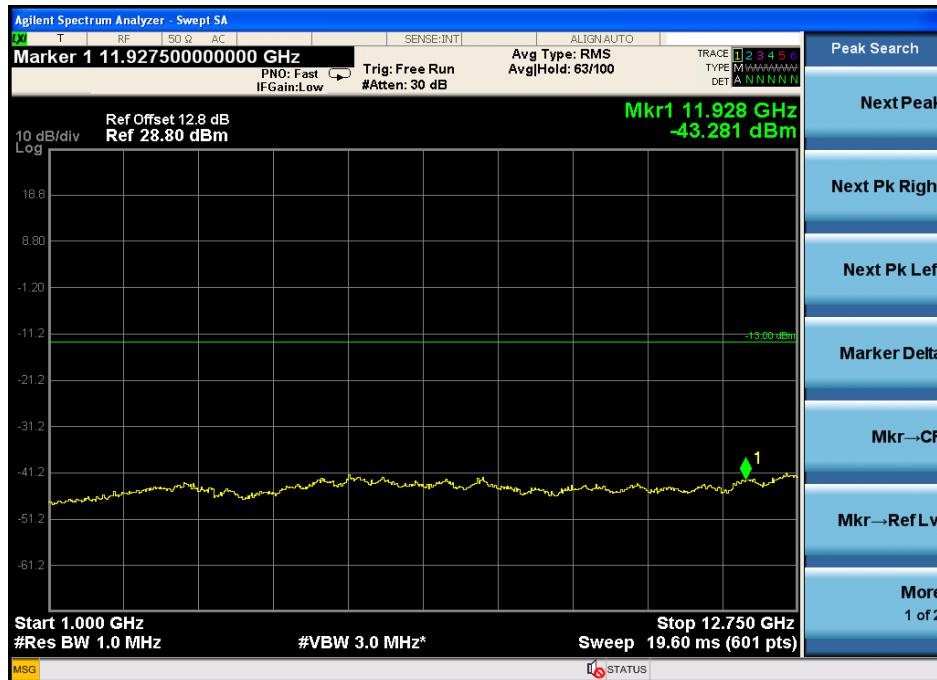
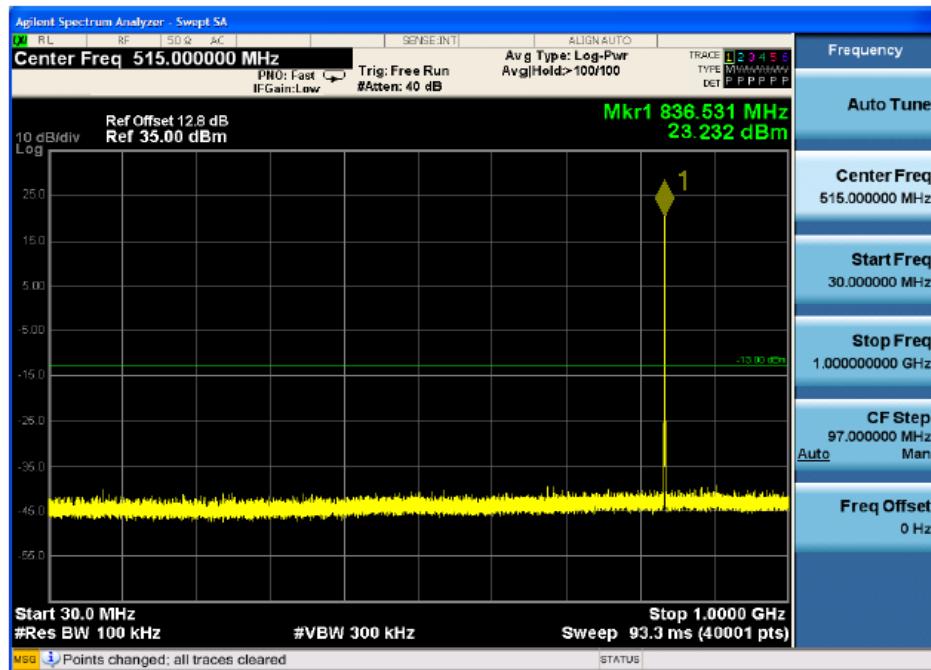
### 7.1.5 TEST RESULTS

NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

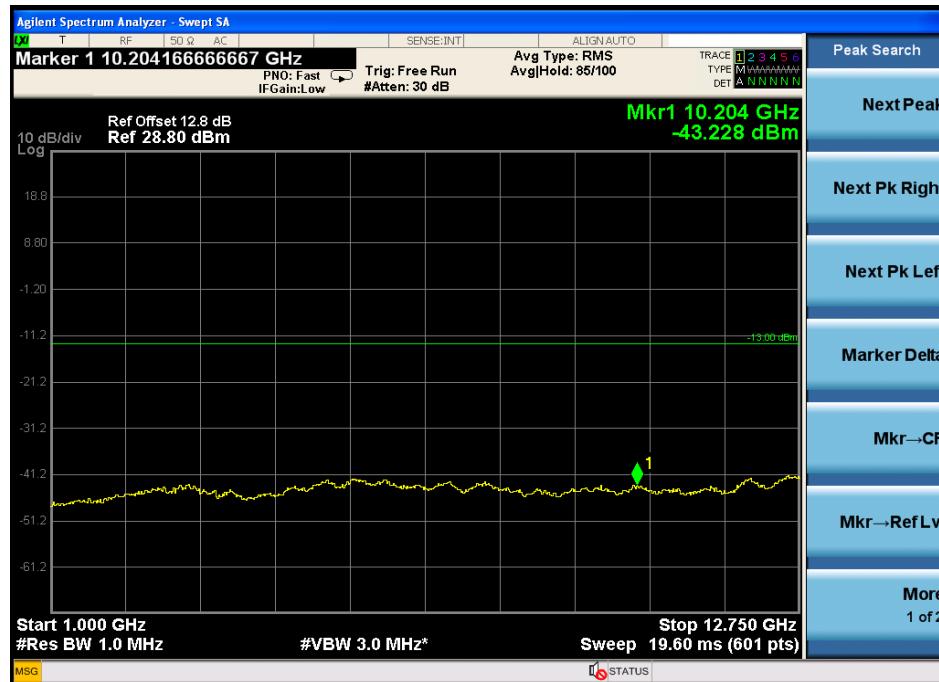
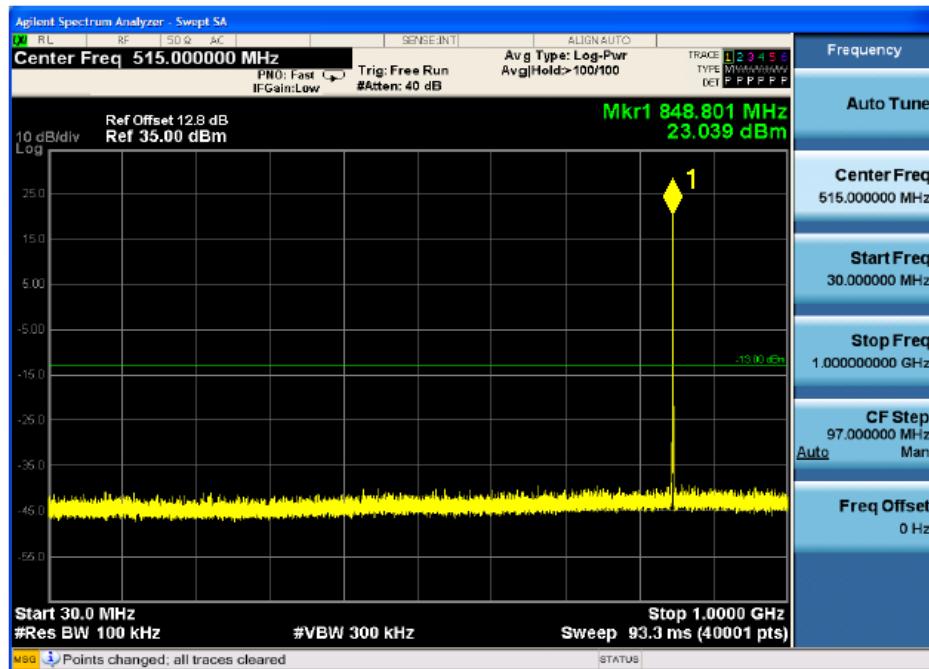
Test Mode: GSM 850 CH 128



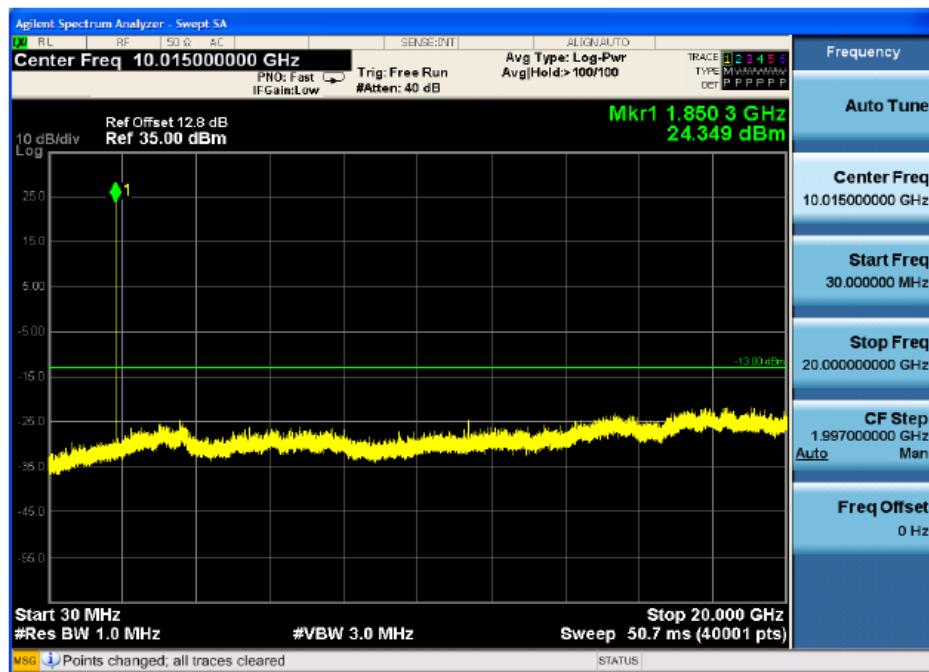
Test Mode: GSM 850 CH 190



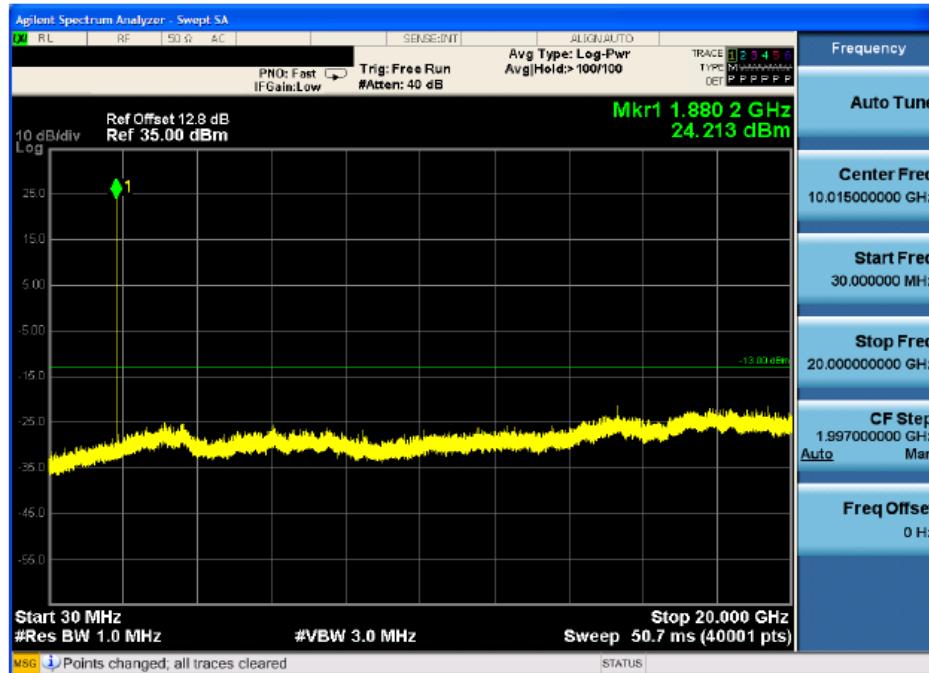
Test Mode: GSM 850 CH 251



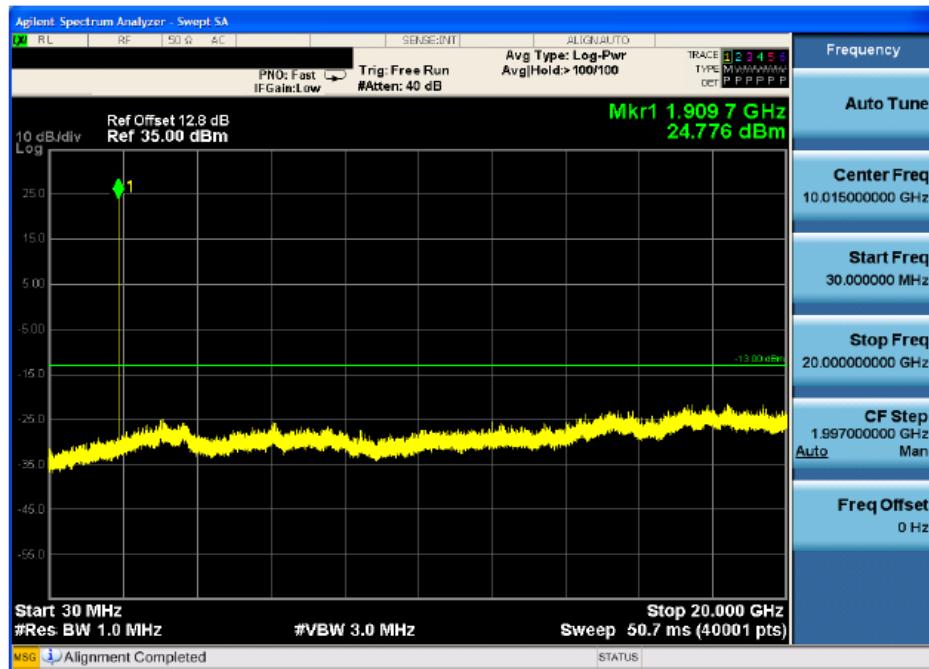
Test Mode: GSM 1900 CH 512



Test Mode: GSM 1900 CH 661



Test Mode: GSM 1900 CH 810



## 8. RADIATED SPURIOUS EMISSIONS

### 8.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917	Radiated Spurious emissions	-13dBm	
24.238			PASS

#### 8.1.1 TEST PROCEDURE

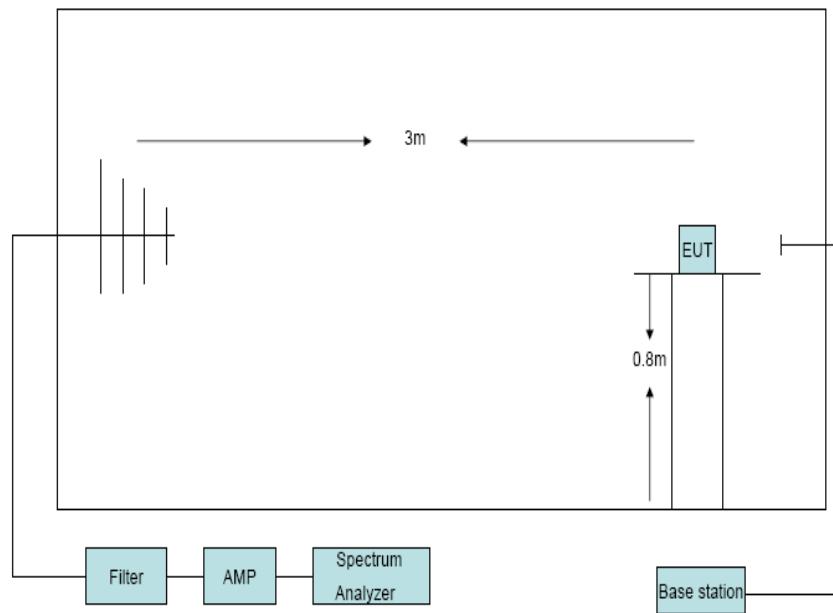
1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated spurious emissions from 30MHz to 10<sup>th</sup> harmonious of fundamental frequency were measured at 3m with a test antenna and a spectrum analyzer with RBW= 1MHz,VBW= 1MHz ,peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions (record as LVL) at 3m were measured by 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.
3. Final spurious emissions levels were measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency below 1GHz) or Horn antenna (for frequency above 1GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn 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 -Substitution antenna Loss(only for Dipole antenna) - Analyzer reading. Then final

spurious emissions were calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15

#### 8.1.2 DEVIATION FROM STANDARD

No deviation.

#### 8.1.3 TEST SETUP



#### 8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

### 8.1.5 TEST RESULTS

NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

Test Mode : GSM 850 CH128						
Frequency (MHz)	Antenna polarization	LVL (dBm)	Correction factor(dB)	Result (ERP)(dBm)	Limit (dBm)	Margin (dB)
689.32	H	-54.73	-6.53	-61.26	-13	48.26
689.32	V	-57.99	-6.53	-64.52	-13	51.52
1648.4	H	-53.04	11.5	-41.54	-13	28.54
1648.4	V	-43.2	10.56	-32.64	-13	19.64
Test Mode : GSM 850 CH190						
1673.2	H	-52.48	10.94	-41.54	-13	28.54
1673.2	V	-48.9	10.9	-38	-13	25
Test mode: GSM 850 CH251						
1697.6	H	-45.66	11.67	-33.99	-13	20.99
1697.6	V	-41.35	11.13	-30.22	-13	17.22

Test Mode : GSM 1900 CH512						
Frequency (MHz)	Antenna polarization	LVL (dBm)	Correction factor(dB)	Result (ERP)(dBm)	Limit (dBm)	Margin (dB)
689.32	H	-55.08	-6.53	-61.61	-13	48.61
689.32	V	-54.08	-6.53	-60.61	-13	47.61
3700.4	H	-51.09	8.57	-42.52	-13	29.52
3700.4	V	-50.41	8.37	-42.04	-13	29.04
Test Mode : GSM 1900 CH661						
3760	H	-52.59	8.75	-43.84	-13	30.84
3760	V	-50.18	8.55	-41.63	-13	28.63
Test mode: GSM 1900 CH810						
3819.6	H	-55.35	8.94	-46.41	-13	33.41
3819.6	V	-52.04	8.72	-43.32	-13	30.32

## 9. BAND EDGE

### 9.1 APPLIED PROCEDURES / LIMIT

Section	Test Item	Limit	Result
22.917 (b)			
24.238 (b)	Band edge	-13dBm	PASS

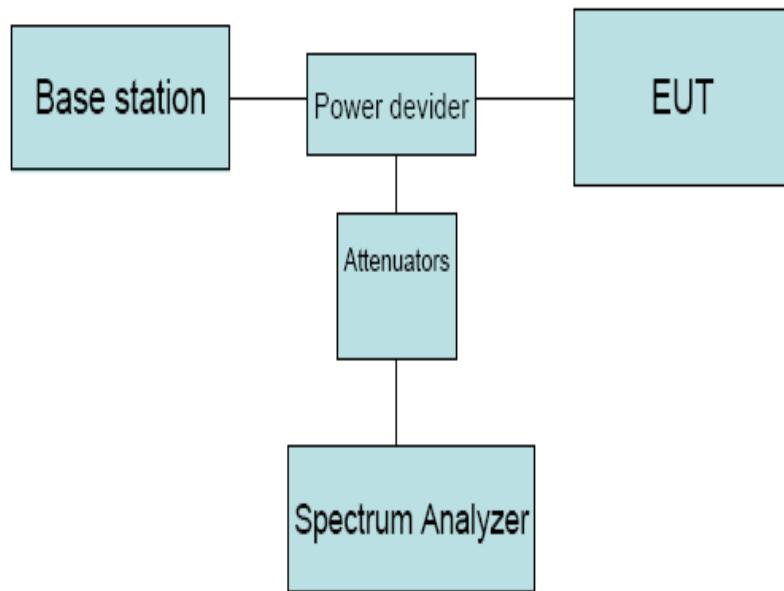
#### 9.1.1 TEST PROCEDURE

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured.

#### 9.1.2 DEVIATION FROM STANDARD

No deviation.

#### 9.1.3 TEST SETUP



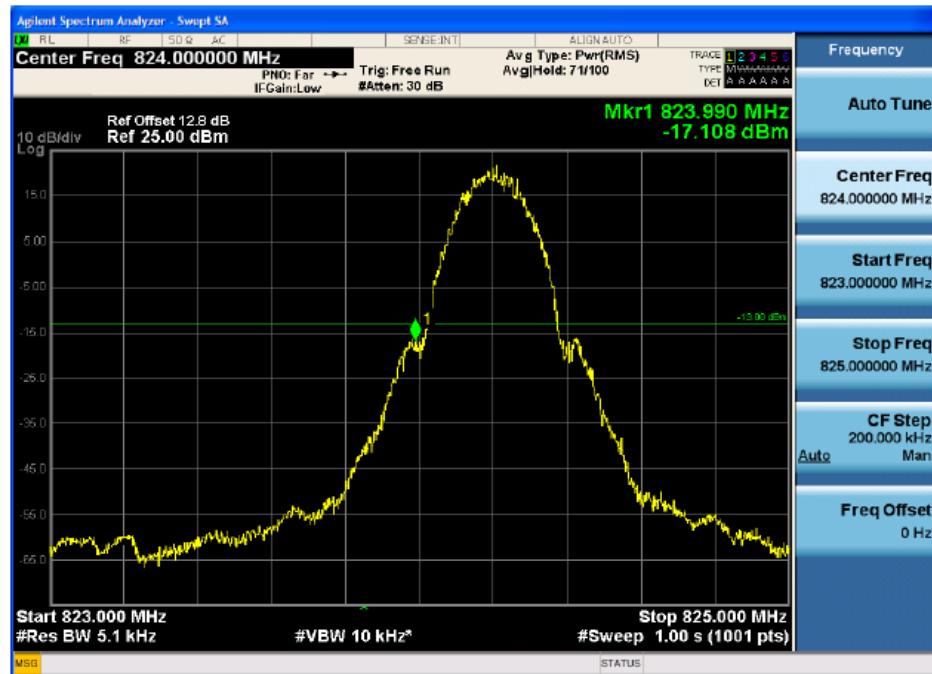
#### 9.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

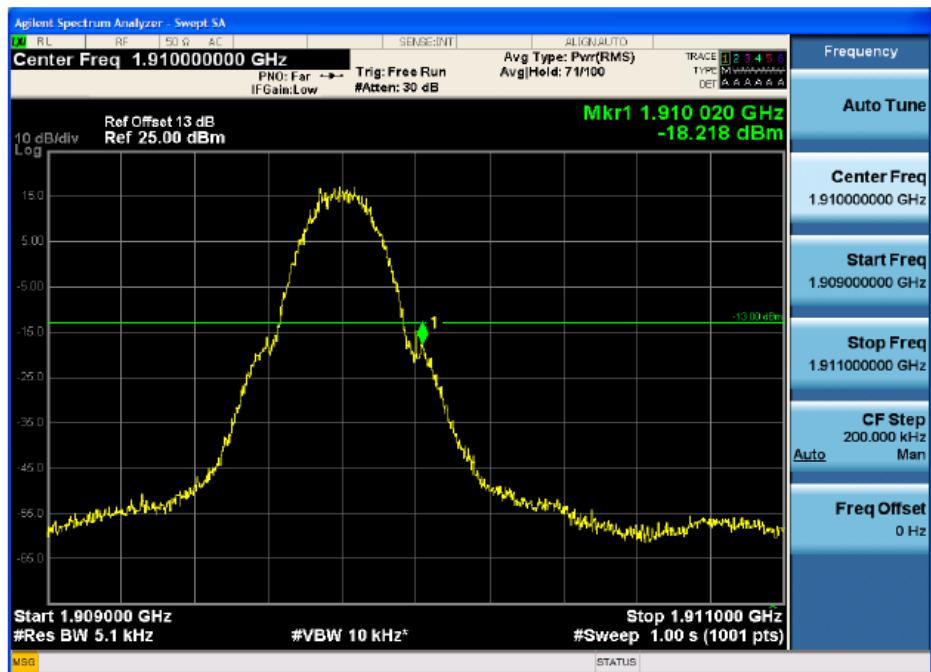
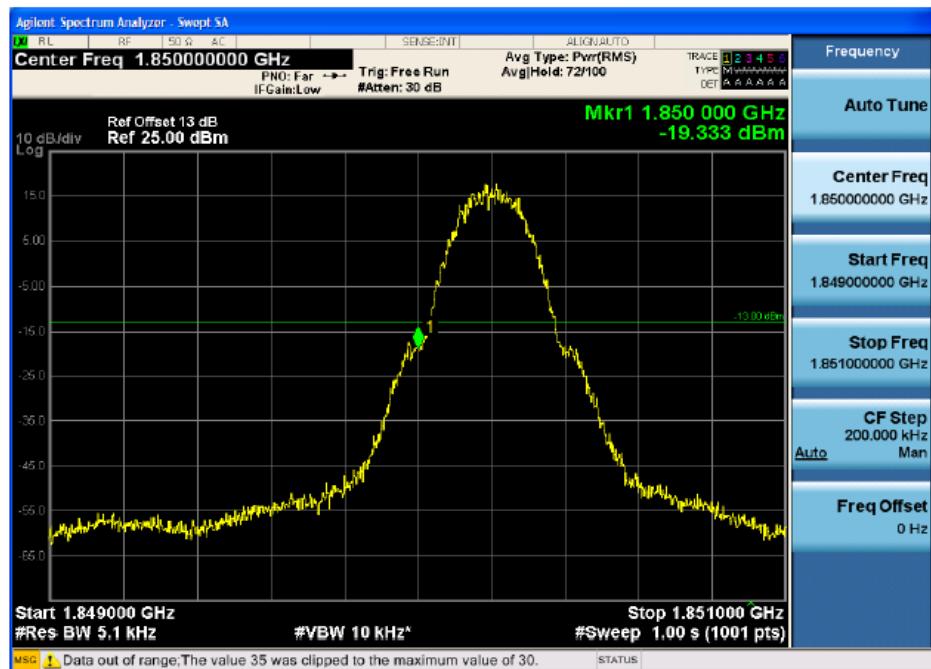
### 9.1.5 TEST RESULTS

NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

Test Mode: GSM 850



Test Mode: GSM 1900



## 10. CONDUCTED EMISSION MEASUREMENT

### 10.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

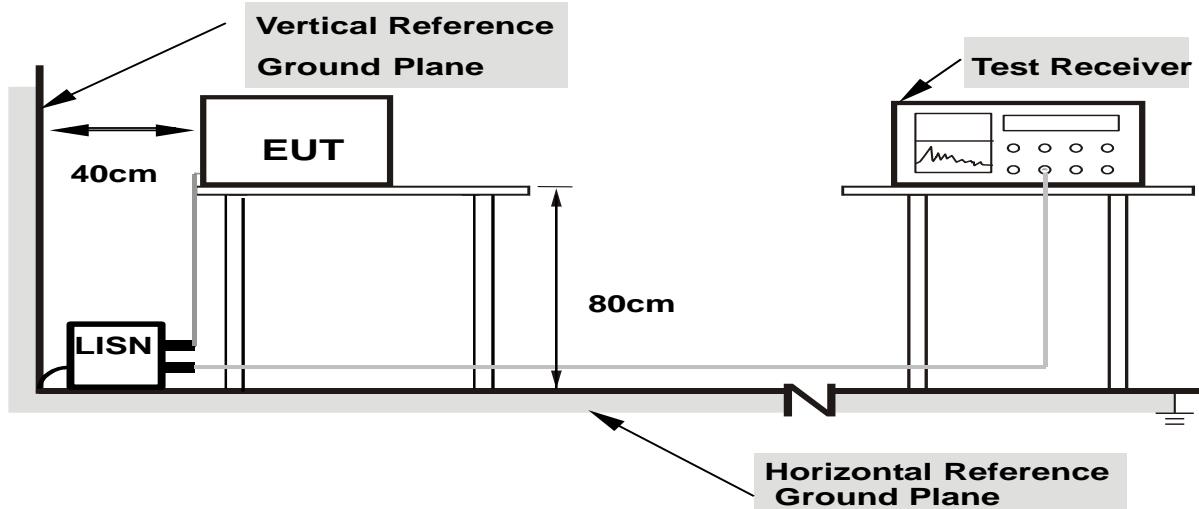
## 10.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

## 10.3 DEVIATION FROM TEST STANDARD

No deviation

## 10.4 TEST SETUP



**Note: 1. Support units were connected to second LISN.**

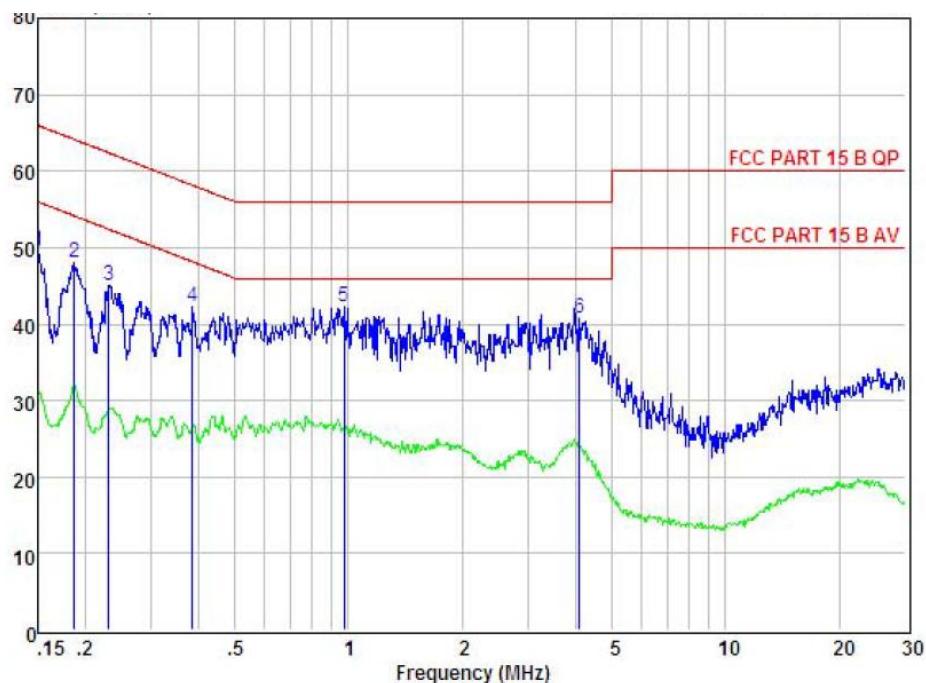
**2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes**

## 10.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

## 10.6 TEST RESULTS

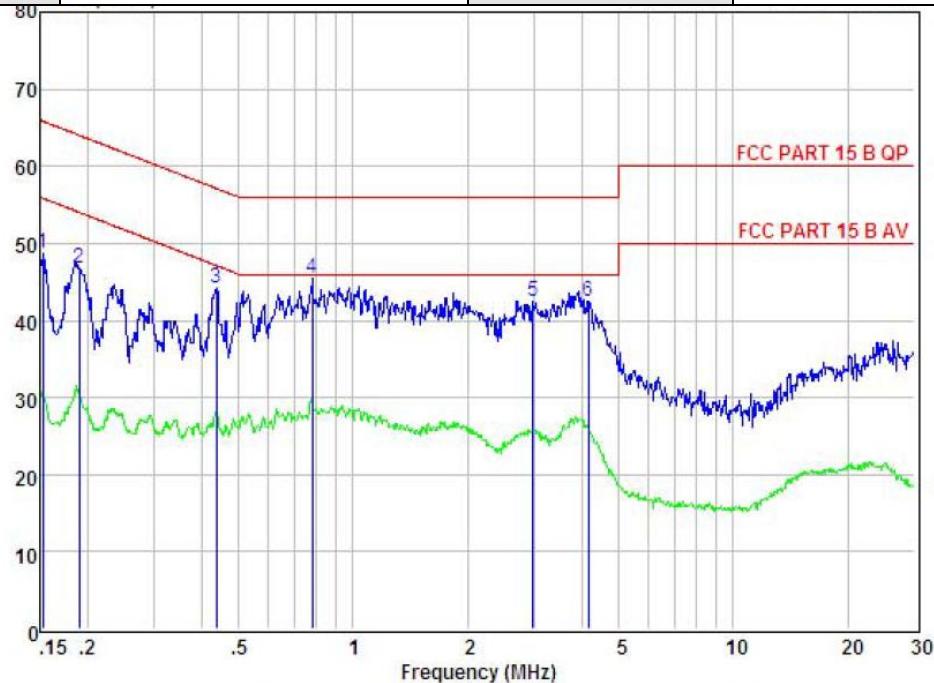
EUT :	Rugged Smartphone	Model Name. :	DK66
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5Vfrom adapter AC 120V/60Hz	Test Mode :	Mode 4



Item	Freq	Read	LISN	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	dB	dBuV	dBuV	dBuV	
1	0.150	39.66	0.03	-9.72	0.10	49.51	66.00	-16.49	Peak
2	0.187	38.18	0.03	-9.72	0.10	48.03	64.15	-16.12	Peak
3	0.232	35.17	0.03	-9.72	0.10	45.02	62.39	-17.37	Peak
4	0.385	32.48	0.03	-9.72	0.10	42.33	58.17	-15.84	Peak
5	0.974	32.48	0.04	-9.71	0.10	42.33	56.00	-13.67	Peak
6	4.092	30.77	0.08	-9.69	0.12	40.66	56.00	-15.34	Peak

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

EUT :	Rugged Smartphone	Model Name. :	DK66
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5Vfrom adapter AC 120V/60Hz	Test Mode :	Mode 4



Item	Freq	Read	LISN	Preamp	Cable	Level	Limit	Margin	Remark
	MHz	dBuV	Factor	Factor	dB	dBuV	dBuV	dBuV	
1	0.152	38.81	0.03	-9.72	0.10	48.66	65.87	-17.21	Peak
2	0.190	36.89	0.03	-9.72	0.10	46.74	64.02	-17.28	Peak
3	0.437	34.34	0.03	-9.72	0.10	44.19	57.11	-12.92	Peak
4	0.779	35.63	0.00	-9.71	0.10	45.44	56.00	-10.56	Peak
5	2.978	32.60	0.07	-9.70	0.12	42.49	56.00	-13.51	Peak
6	4.158	32.55	0.08	-9.69	0.12	42.44	56.00	-13.56	Peak

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

## 11. PEAK TO AVERAGE RATIO

### 11.1 APPLIED PROCEDURES / LIMIT

In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

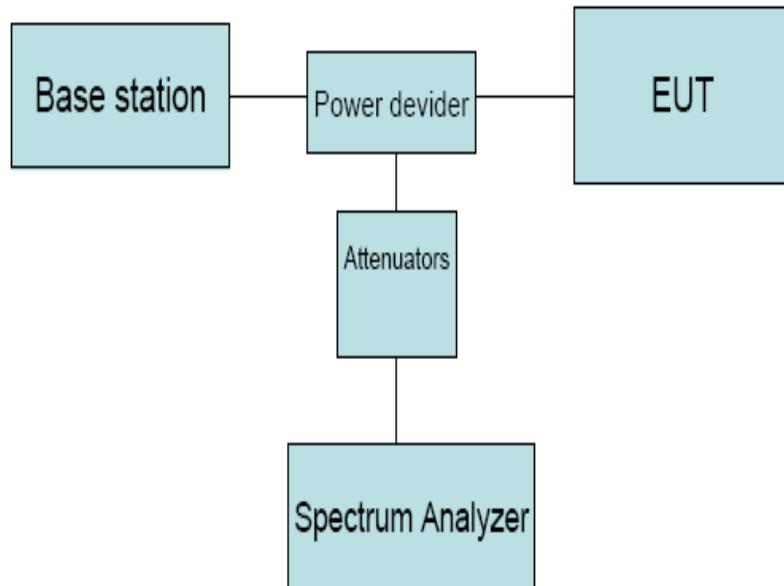
#### 11.1.1 TEST PROCEDURE

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured.

#### 11.1.2 DEVIATION FROM STANDARD

No deviation.

#### 11.1.3 TEST SETUP



#### 11.1.4 EUT OPERATION CONDITIONS

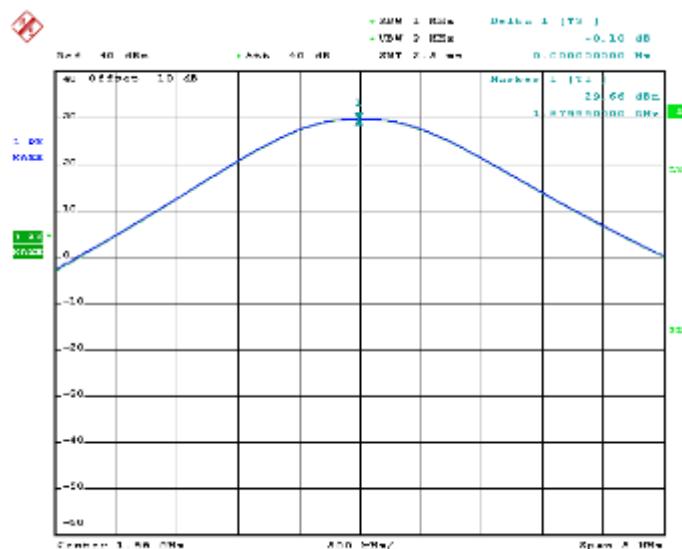
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

### 11.1.5 TEST RESULTS

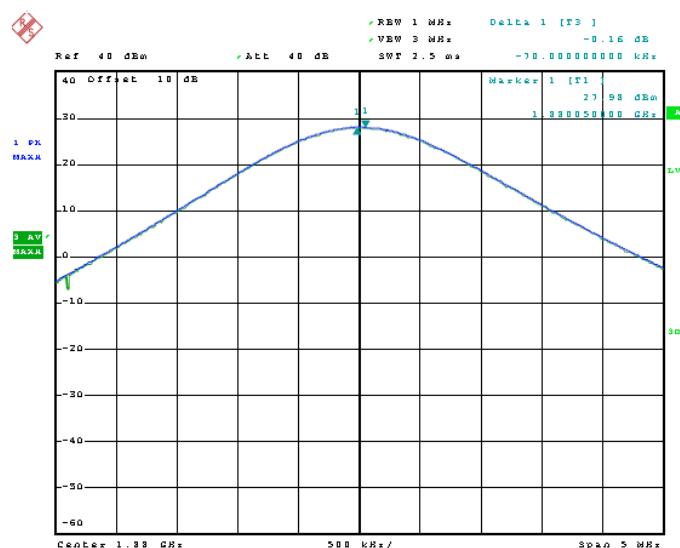
NOTE: ALL MODE HAS BEEN TESTED, ONLY WORST DATA SHOWN IN THIS REPORT.

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM1900	GSM	LCH	0.10	13	PASS
		MCH	0.10	13	PASS
		HCH	0.10	13	PASS
	GPRS	LCH	0.16	13	PASS
		MCH	0.16	13	PASS
		HCH	0.16	13	PASS

Test plots of worst case  
GSM mode



Test plots of worst case  
GSM mode



**END OF REPORT**