FCC Test Report - GSM 1900

Report ID: 03360-RF-00097

FCC ID : AZ489FT7078

Tested Model : LEX L10i

Test Date : Dec 8, 2015 ~ Feb 24, 2016

Issued Date : 2 Mar, 2016

Applicant : Motorola Solution Malaysia Sdn Bhd

Address : Innoplex Plot 2A, Medan Bayan lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia

Testing Lab : Motorola Penang Adv. Comm. Laboratory

Lab Address : Motorola Solutions Malaysia Sdn Bhd, Plot 2, Bayan Lepas Technoplex Industrial Park, Mukim 12 S.W.D, 11900 Bayan Lepas, Penang, Malaysia.

FCC Registration: 772092

Prepare By: _____, Date: __2 Mar, 2016_____

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1.0. Summary of Test Results

FCC Clause	Test Item	Results	Remark
2.1046	Conducted RF Output Power	PASS	Meet the requirement of limit
2.1046 24.232(d)	Peak-to-Average Power Ratio	PASS	Meet the requirement of limit
2.1049 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit
2.1055 24.235	Frequency Stability	PASS	Meet the requirement of limit
2.1051 24.238(a)(b)	Band Edge Conducted Spurious Emission	PASS	Meet the requirement of limit
2.1051 24.238(a)(b)	Conducted Spurious Emissions	PASS	Meet the requirement of limit
2.1046 24.232(c)	Equivalent Isotropic Radiated Power (EIRP)	PASS	Meet the requirement of limit
2.1051 24.238(a)(b)	Radiated Spurious Emissions	PASS	Meet the requirement of limit

1.1. Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01

1.2. Equipment List

Description	Model	Serial Number	Calibration Date	Calibration Due Date
POWER SUPPLY	6623A	2916A01428	3-Apr-15	3-Apr-16
Wideband Radio Communication Tester	CMW500	154550	23-Jun-15	23-Jun-16
SIGNAL ANALYZER	FSV40	101431	29-Apr-15	29-Apr-16
CHAMBER	SH-641	92002651	15-Mar-15	15-Mar-16
DRG HORN FREQ.	SAS-571	566	2-Aug-15	2-Aug-16
PREAMPLIFIER	PAM-0118P	361	NA	NA
BILOG ANTENNA	CBL6112B	2964	23-Apr-14	23-Apr-16
POWER SUPPLY	6031A	3121A02341	12-Jun-14	12-Jun-16
EMI TEST RECEIVER	ESIB26	100336	17-Jun-15	17-Jun-16
MICROWAVE SIGNAL GENERATOR	SMP04	100131	25-Jun-15	25-Jun-16
SYSTEM CONTROLLER	SC104V	050806-1	NA	NA
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	NA	NA
ANTENNA POSITIONING TOWER	TLT2	NA	NA	NA
TEST RECEIVER	ESIB26	827769/009	16-Jun-15	16-Jun-16
SIGNAL ANALYZER	FSV40	101103	25-Jun-15	25-Jun-16
5m Semi-anechoic Chamber	S800-HX	J2308	29-Apr-15	29-Apr-16
BILOG ANTENNA	CBL6112B	2863	24-Jul-15	24-Jul-16
DATA LOGGER	TM320	12249289	12-Apr-15	12-Apr-16
BILOG ANTENNA	CBL6112D	25516	23-Apr-15	23-Apr-16
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170143	24-Nov-15	24-Nov-16

1.3. General Information

General Description of EUT

Product	Smart phone		
Brand	Motorola Solutions		
Test Model	LEX L10i		
Power Supply Rating	3.7Vdc (Battery), 5Vdc (Adapter)		
Mode of operation	GSM 1900, EDGE1900		
Modulation Type	GMSK, 8PSK		
Operating Frequency	GSM 1900 EDGE 1900	Channel Bandwidth 200kHz	1850.2MHz~1909.8MHz
Max. EIRP Power	GSM 1900	29.95dBm	
	EDGE 1900	30.18dBm	
Antenna Type	GSM 1900	Inverted-L Monopole with 0.8 to -0.6dBi gain	
SW Version	LEXL10-INT-D17		
HW Version	Rev A		

Note:

1. The EUT contains following accessory devices and data cable.

Item	Brand	Model or P/N	Specification
Rechargeable Lithium ion battery	MOTOROLA	PMNN4472A	3.7Vdc, 2340mAh, 8.7Wh
Rechargeable Lithium ion battery	MOTOROLA	PMNN4475A	3.7Vdc, 4560mAh, 16.9Wh

ITE Power Supply	MOTOROLA	HKTN4009A	I/P: 100-240Vac, 50-60Hz, 0.2A O/P: 5Vdc, 1.2A
USB cable (CABLE: LEX USB SYNC AND CHARGE)	N/A	CB000262A01	-
Holster	N/A	HKLN4618A	-

Description of Support Units

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

NO.	Product	Brand	Model No.	Serial No.	FCC ID
1	Wideband Radio Communication Tester	R&S	CMW500	154550	NA

NO.	Signal Cable Description of The above Support Units
1	NA

Note:

1. All power cords of the above support units are non-shielded.
2. Item 1 acted as a communication partner to transfer data.

EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2
FCC 47 CFR Part 24
KDB 971168 D01 Power Meas License Digital Systems v02r02
ANSI/TIA/-603-D

NOTE: All test items have been performed and recorded as per the above standards.

1.4. Channel number and frequency info

		Test Channel Number			Test Channel Frequency (MHz)		
Band	Available Channel Number	Low Channel	Mid Channel	High Channel	Low Channel	Mid Channel	High Channel
GSM 1900	512~810	512	661	810	1850.2	1880	1909.8

1.5. Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
The Radiated Emission and Equivalent Isotropically Radiated Power (EIRP) worst case was found when positioned on Z-Plane for GSM 1900.
The following channel(s) was (were) selected for the final test as listed below:

GSM 1900

Test Item	Available Channel	Tested Channel	Modulation	Mode
Conducted RF Output Power	512~ 810	512, 661, 810	GMSK, 8PSK	All Modes
Peak to Average Power Ratio	512~ 810	512, 661, 810	GMSK, 8PSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot
Occupied Bandwidth	512~ 810	512, 661, 810	GMSK, 8PSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot
Frequency Stability	512~ 810	661	GMSK, 8PSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot
Band Edge Conducted Spurious Emission	512~ 810	512, 810	GMSK, 8PSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot
Conducted Spurious Emission	512~ 810	512, 661, 810	GMSK, 8PSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot
Radiated Emission	512~ 810	512, 661, 810	GMSK, 8PSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot
Equivalent Isotropically Radiated Power (EIRP)	512~ 810	512, 661, 810	GMSK	GSM uplink 1 slot, EDGE MCS-9 uplink 1 slot

NOTE:

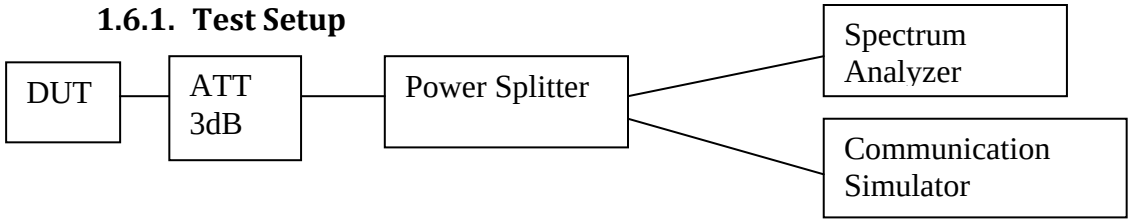
1. The Peak to average ratio, occupied bandwidth, frequency stability, band edge conducted spurious emission, conducted spurious emission, radiated emission, and Equivalent Isotropically Radiated Power (EIRP) was performed under GSM uplink 1 slot and Edge MSC-9 uplink 1 slot because this is worst case value (highest power) found in 2 different modulations.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
Conducted RF Output Power	**25°C, 50% RH**	**3.7V DC**	**ckchan**
Peak-to-Average Power Ratio	**25°C, 50% RH**	**3.7V DC**	**ckchan**
Occupied Bandwidth	**25°C, 50% RH**	**3.7V DC**	**ckchan**
Frequency Stability	**25°C, 50% RH**	**3.7V DC**	**ckchan**
Band Edge Conducted Spurious Emission	**25°C, 50% RH**	**3.7V DC**	**ckchan**
Conducted Spurious Emission	**25°C, 50% RH**	**3.7V DC**	**ckchan**
Radiated Spurious Emission	**25°C, 63.7% RH**	**3.7V DC**	**Nazrin/Qawiman**
Equivalent Isotropically Radiated Power (EIRP)	**25°C, 63.7% RH**	**3.7V DC**	**Nazrin/Qawiman**

1.6. Conducted RF Output Power

1.6.1. Test Setup



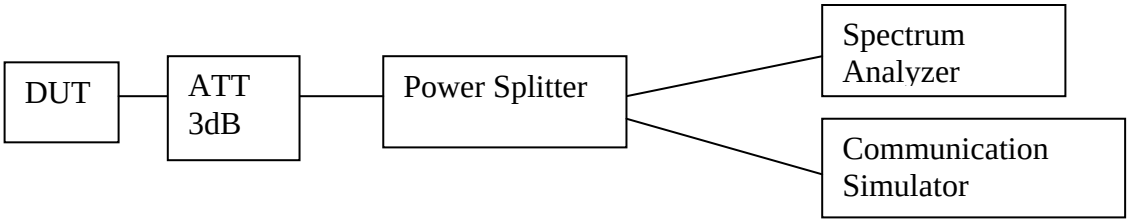
1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. All the measurements were done at low, mid, high channel for each band and different modulation.
5. Record the average power into the test report.

1.6.2. Conducted RF Output Power – GSM 1900, GPRS 1900, EDGE 1900 (1850 – 1910MHz)

	Test Mode	Conducted Output Power (dBm)		
		Low CH 512	Mid CH 661	High CH 810
		1850.2 MHz	1880 MHz	1909.8 MHz
GSM	**Uplink 1 slot**	29.634	29.571	29.380
GPRS, CS4	**Multislot class 8, uplink 1 slot**	**29.654**	29.529	29.363
	Multislot class 10, uplink 2slot	27.630	27.671	27.484
	Multislot class 11, uplink 3 slot	25.559	25.530	25.436
	Multislot class 12, uplink 4slot	23.448	23.436	23.235
EDGE MCS-9 (8-PSK)	**Multislot class 8, uplink 1 slot**	**25.491**	25.421	25.305
	Multislot class 10, uplink 2slot	23.474	23.323	23.201
	Multislot class 11, uplink 3 slot	21.350	21.286	21.055
	Multislot class 12, uplink 4slot	19.684	19.446	19.288

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) Set DUT to transmit maximum power through communication simulator
4) Set the CCDF (Complementary Cumulative Distribution Function) option in the spectrum analyzer.
5) Spectrum Analyzer setting, RBW = 20MHz.
6) Recorded the maximum PAR level associated with a probability of 0.1% as Peak to Average Ratio.
7) All the measurements were done at low, mid, high channel for each band and different modulation.

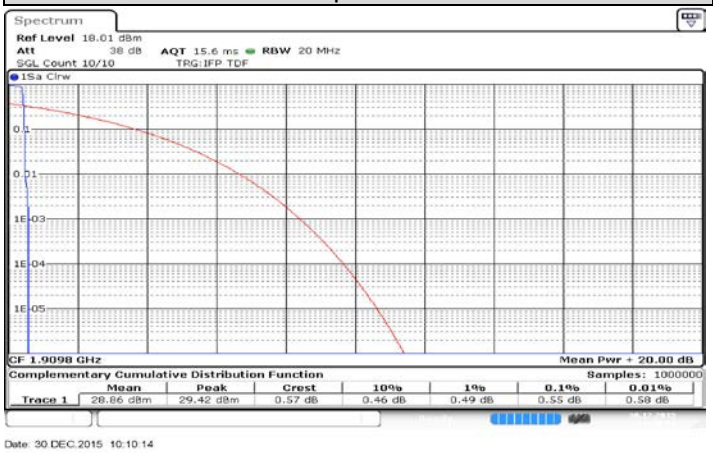
1.7.2. Test Limit

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.

1.7.3. Peak To Average Power Ratio – GSM 1900 (1850 – 1910MHz)

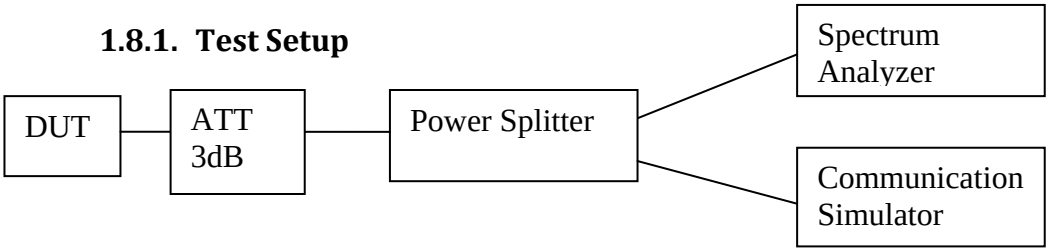
GSM Band	Channel Number	Tx Frequency (MHz)	Peak To Average (dB)	
			GSM Uplink 1 slot	EDGE Class 8 uplink 1 slot
GSM 1900	Low CH 512	1850.2 MHz	0.41	3.36
	Mid CH 661	1880 MHz	0.41	**4.32**
	High CH 810	1909.8 MHz	**0.55**	3.54

Spectrum Plot of Worst Value	
GSM uplink 1 slot	EDGE Class 8 uplink 1 slot



1.8. Occupied Bandwidth

1.8.1. Test Setup



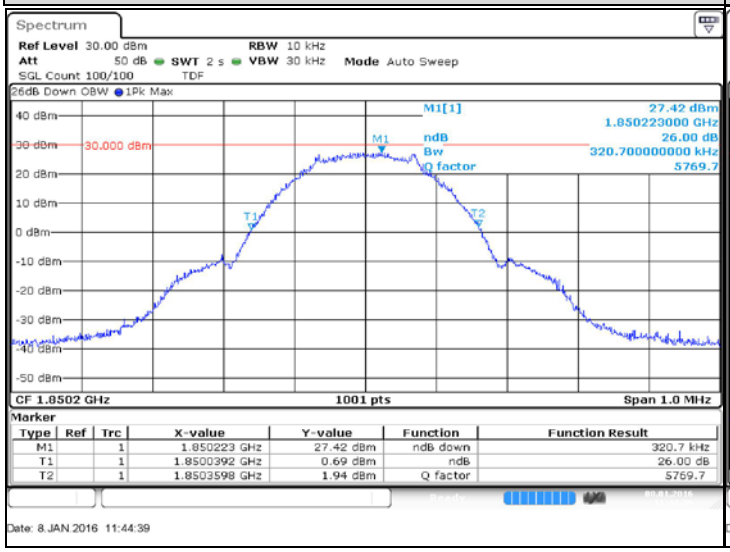
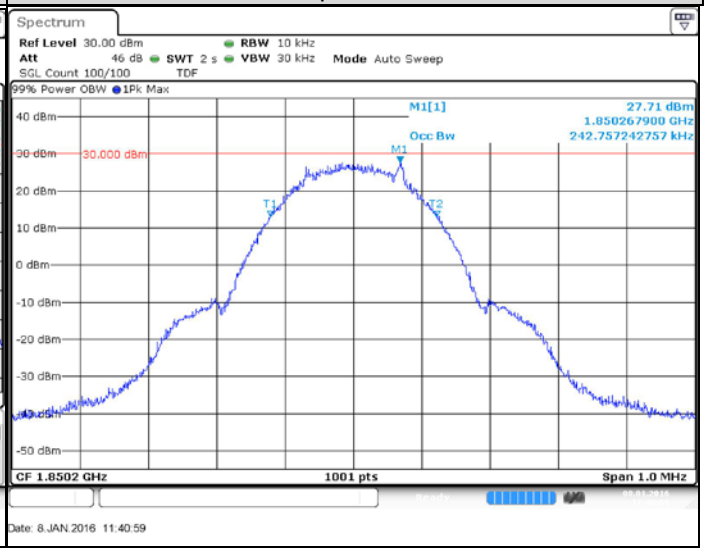
1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) For GSM measurement, set DUT to transmit maximum power & full RB size through communication simulator.
4) For GSM measurement, set DUT to transmit maximum power through communication simulator.
5) Spectrum Analyzer setting, RBW = 10 kHz, VBW = 30 kHz.
6) Measure & record -26dBc and 99% occupied bandwidth (BW).
7) All the measurement was done at low, mid, high channel for each band and different modulation.

1.8.2. Test Limit

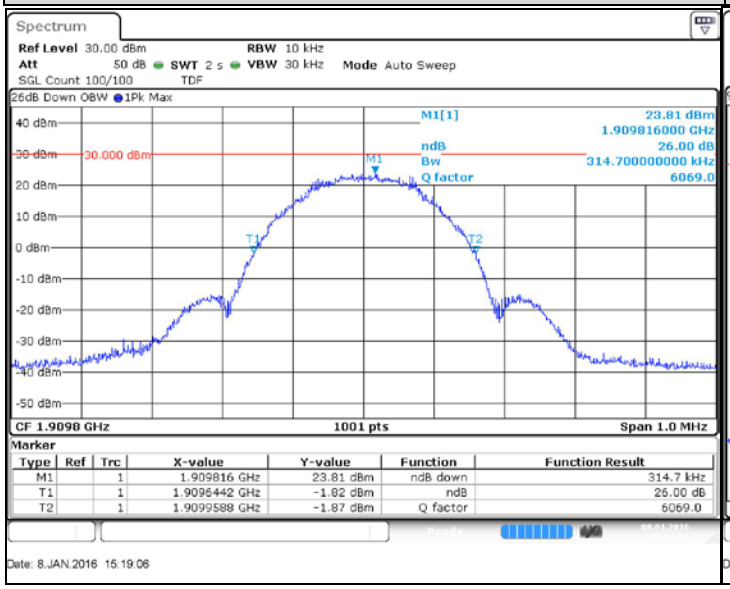
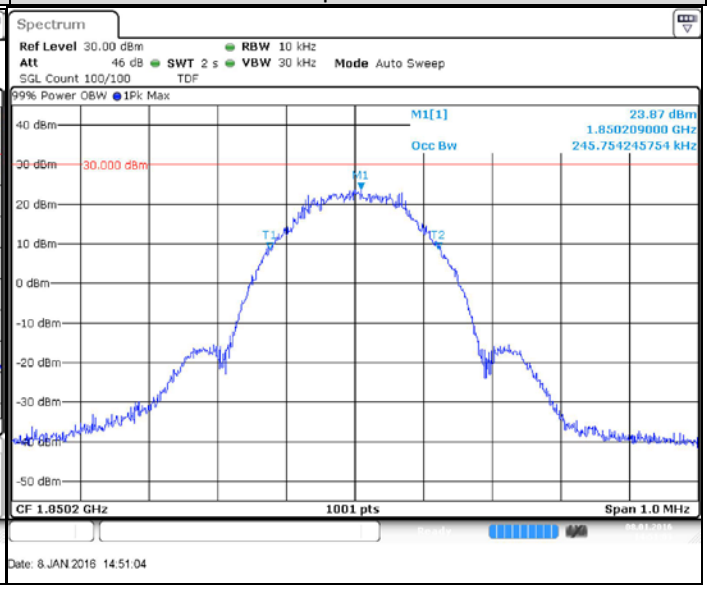
The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

1.8.3. Occupied Bandwidth - GSM 1900 (1850 – 1910MHz)

Mode	Channel Number	Tx Frequency (MHz)	-26 dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
GSM uplink 1 slot	Low CH 512	1850.2 MHz	**320.7**	**242.757**
	Mid CH 661	1880 MHz	317.7	242.757
	High CH 810	1909.8 MHz	317.7	242.757

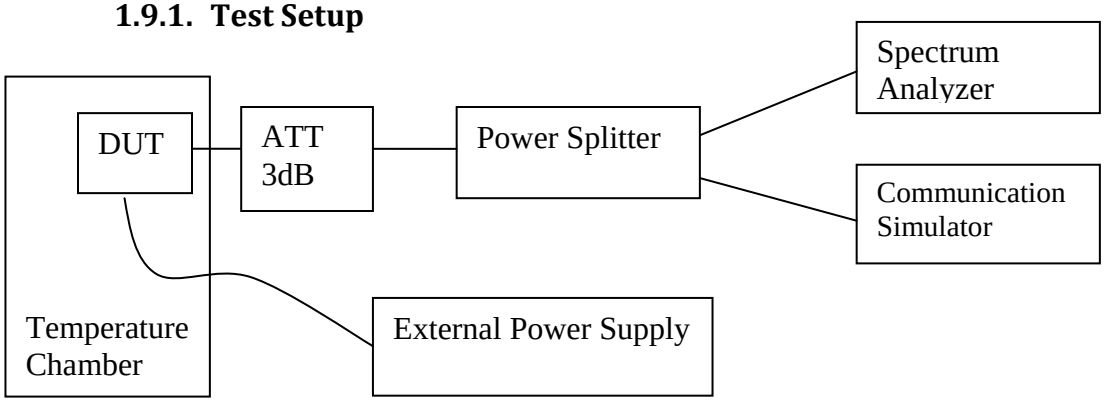
Spectrum Plot of Worst Value	
-26 dBc Bandwidth	99% Occupied Bandwidth
	

Mode	Channel Number	Tx Frequency (MHz)	-26 dBc Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
EDGE Class 8 uplink 1 slot	Low CH 512	1850.2 MHz	313.7	**245.754**
	Mid CH 661	1880 MHz	311.7	242.757
	High CH 810	1909.8 MHz	**314.7**	244.755

Spectrum Plot of Worst Value	
-26 dBc Bandwidth	99% Occupied Bandwidth
	

1.9. Frequency Stability

1.9.1. Test Setup



1) The DUT is placed in the temperature chamber and DUT is power up by external power supply to control the DC input voltage.
2) The temperature chamber could control the temperature and humidity and external power supply could control the test voltage range from minimum to maximum operating voltage.
3) Measured frequency error from the communication simulator by vary below step :
   i. Vary temperature of the temperature chamber from -10 ~ 60 deg C (10 deg C / Step) ** and set external supply voltage constant at nominal voltage.
   ii. Vary external supply voltage from minimum to maximum operation voltage support by DUT and set temperature chamber constant at room temp.
4) All the measurement was done at mid channel for each band.

1.9.2. Test Limit

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

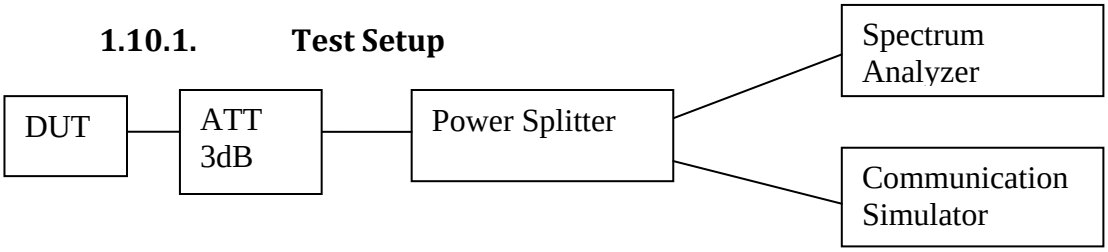
1.9.3. Frequency Stability - GSM 1900 (1850 – 1910MHz)

Band	Frequency Error VS Temperature		
	Temp (Deg C)	Frequency Error (ppm)	
		GSM uplink 1 slot	EDGE Class 8 uplink 1 slot
GSM 1900	**60**	0.0393	0.0373
	50	0.0395	0.0389
	40	0.0398	0.0401
	30	0.0399	0.0396
	20	**0.0401**	**0.0402**
	10	0.0391	0.0374
	0	0.0376	0.0369
	-10	0.0369	0.0358
	-20	0.0368	0.0365
	-30	0.0351	0.0351

Band	Frequency Error VS Voltage		
	Voltage (V)	Frequency Error (ppm)	
		GSM uplink 1 slot	EDGE Class 8 uplink 1 slot
GSM 1900	**4.1**	**0.0407**	0.0383
	3.7	0.0403	0.0389
	3.5	0.0395	**0.0391**

1.10. Band Edge Conducted Spurious Emission

1.10.1. Test Setup

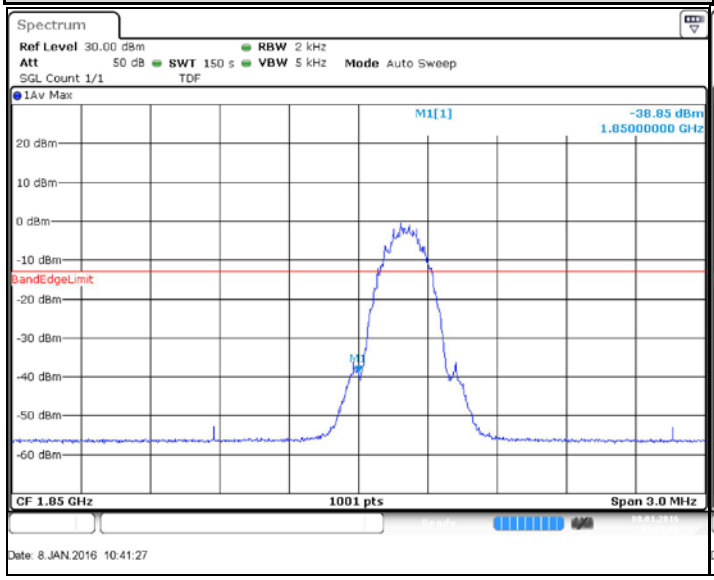
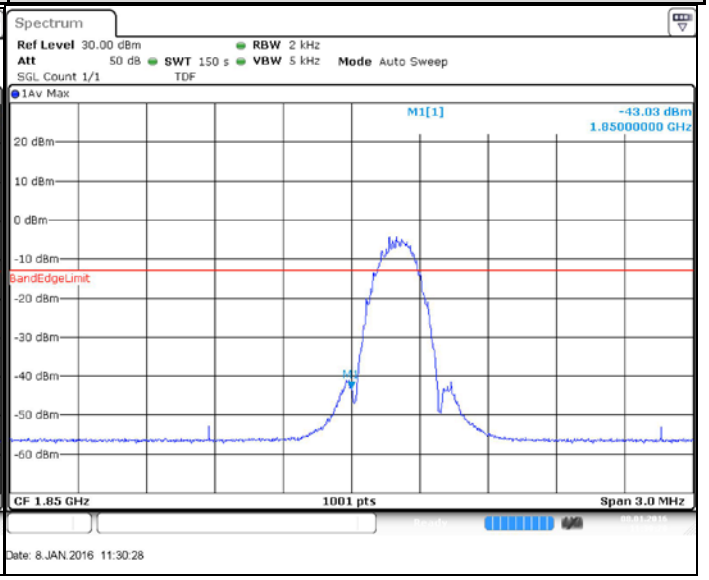


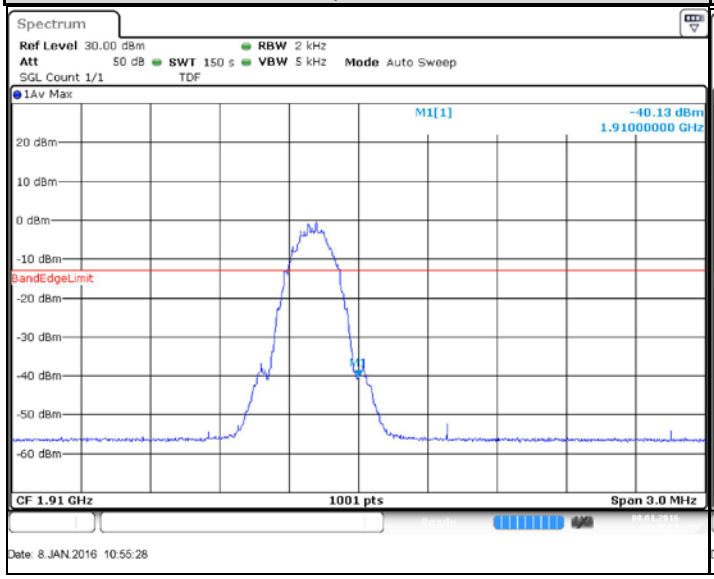
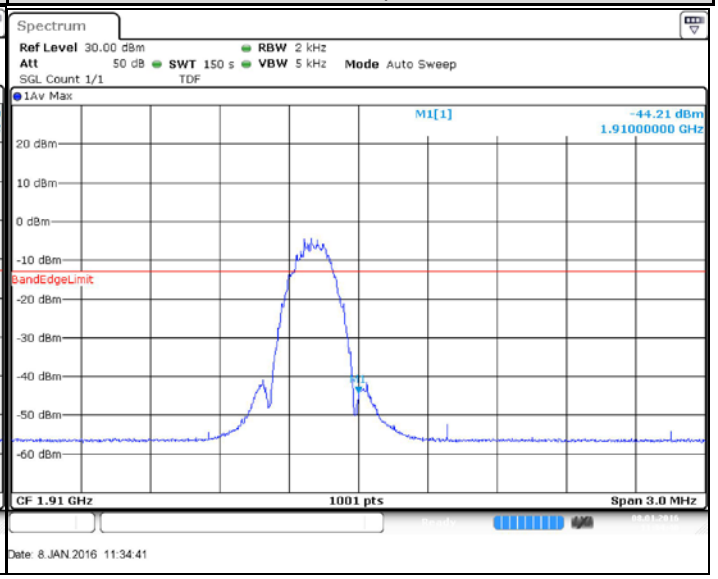
1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) Set DUT to transmit maximum power through communication simulator.
4) The band edges of lowest and highest channels with the highest RF powers were measured.
5) The center frequency of spectrum is the band edge frequency, span is 3MHz, RBW is 1~3% of OBW and VBW is 3 times of RBW.
6) Record the maximum trace plot into the test report.

1.10.2. Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

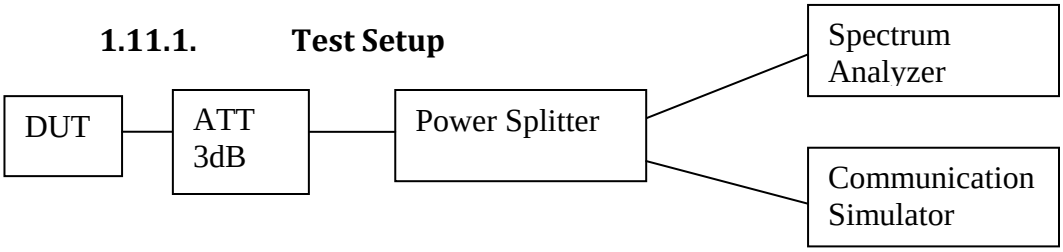
1.10.3. Band Edge Conducted Spurious Emission - GSM 1900 (1850 – 1910MHz)

GSM 1900, Low CH 512, 1850.2MHz	
GSM uplink 1 slot	EDGE Class 8 uplink 1 slot
	

GSM 1900, High CH 810, 1909.8 MHz	
GSM uplink 1 slot	EDGE Class 8 uplink 1 slot
	

1.11. Conducted Spurious Emission

1.11.1. Test Setup

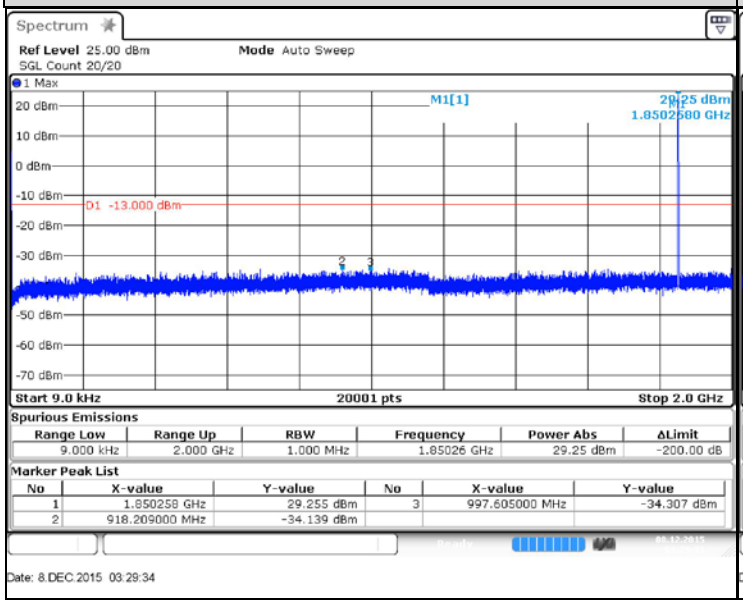
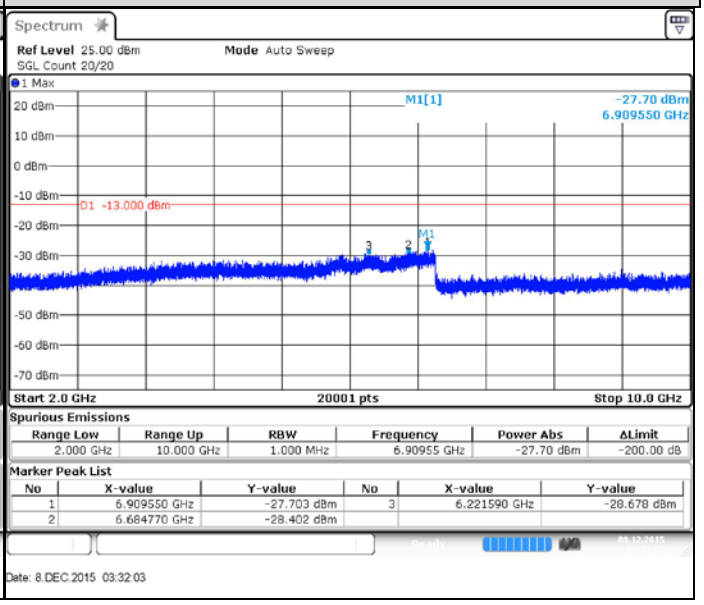


1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) Set DUT to transmit maximum power through communication simulator.
4) Spectrum Analyzer setting, RBW = 1 MHz, VBW = 3 MHz.
5) The spurious emission of lowest, middle and highest channels with the highest RF powers were measured.
6) Record the maximum trace plot into the test report.

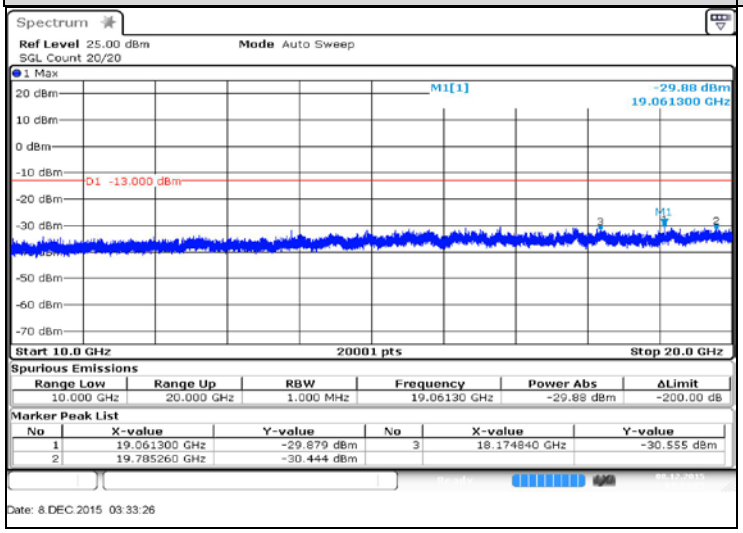
1.11.2. Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

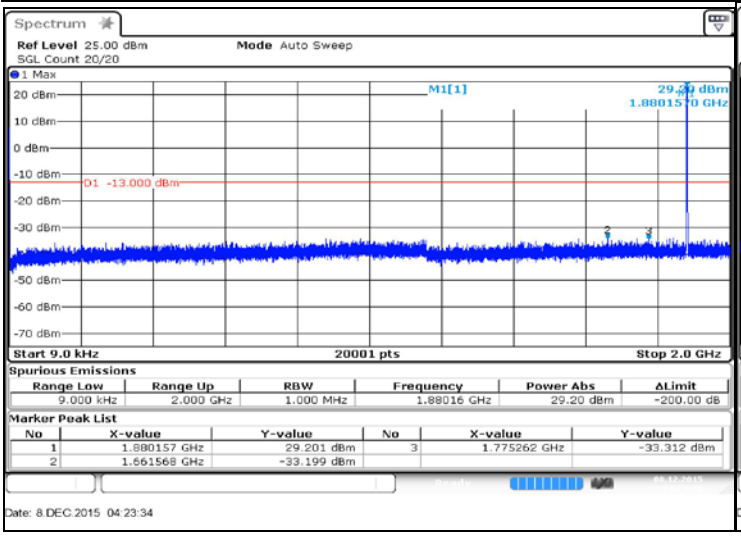
1.11.3. Conducted Spurious Emission - GSM 1900 (1850 – 1910MHz)

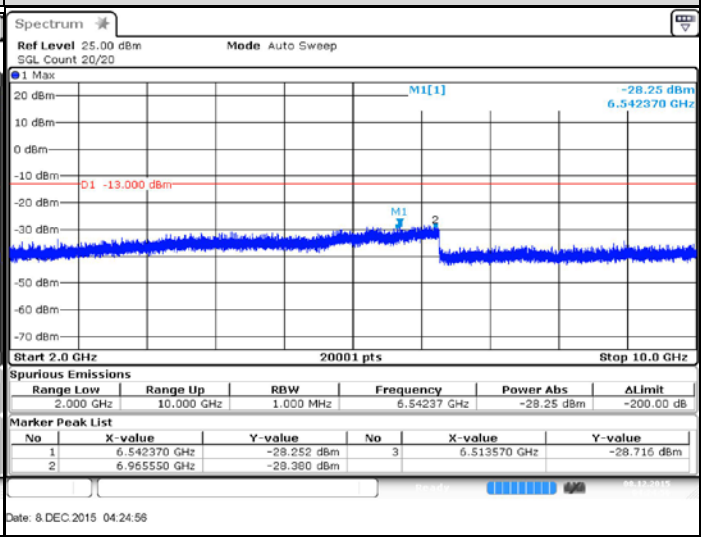
GSM uplink 1 slot - Low Freq (1850.2 MHz)	
9kHz ~ 2GHz	2GHz ~ 10GHz
	

10kHz ~ 20GHz	

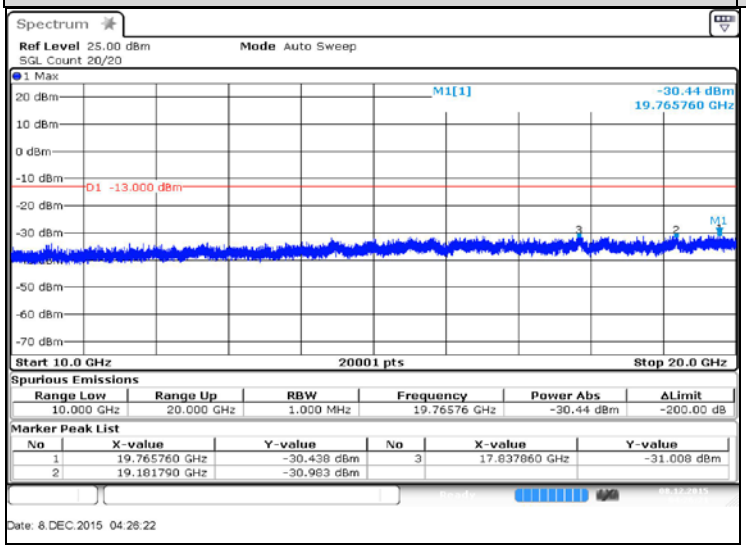


GSM uplink 1 slot - Mid Freq (1880.0 MHz)	
9kHz ~ 2GHz	2GHz ~ 10GHz

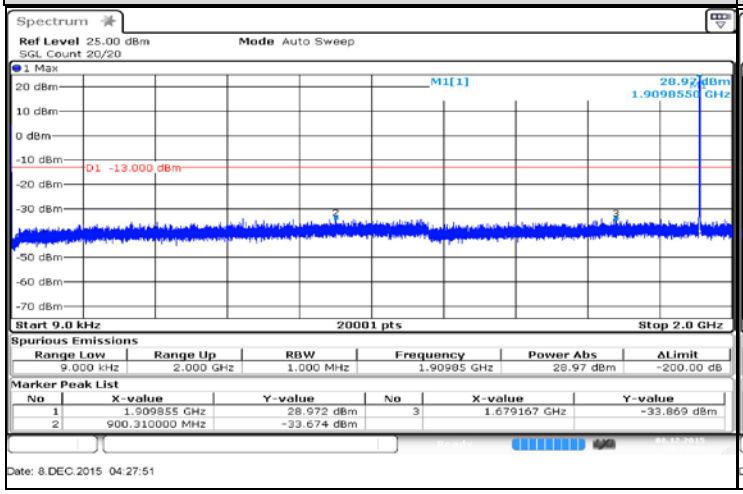


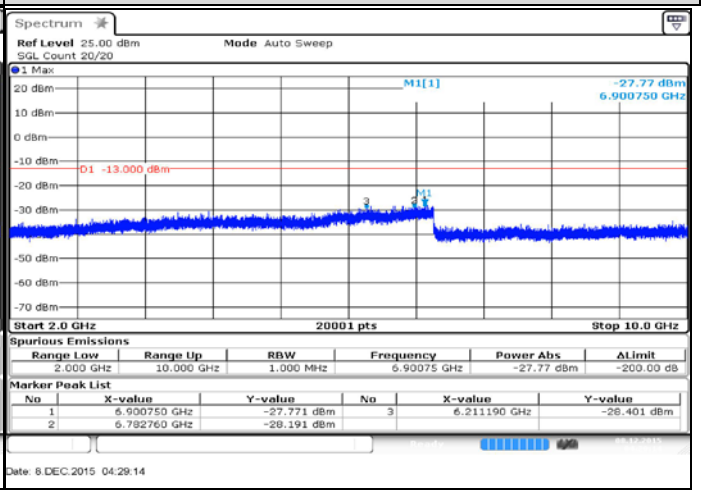


10kHz ~ 20GHz	

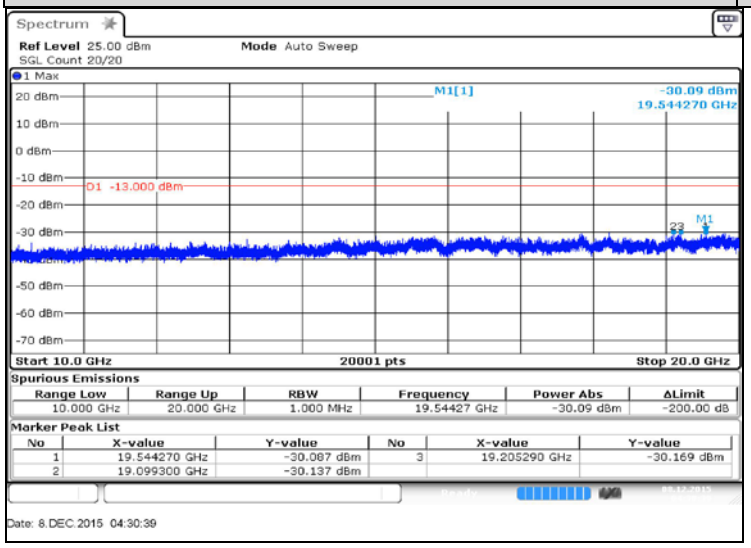


GSM uplink 1 slot - High Freq (1909.8 MHz)	
9kHz ~ 2GHz	2GHz ~ 10GHz

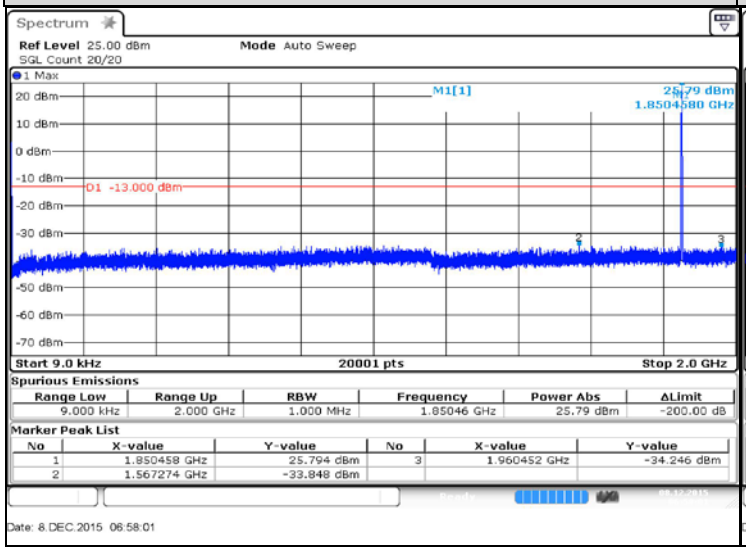


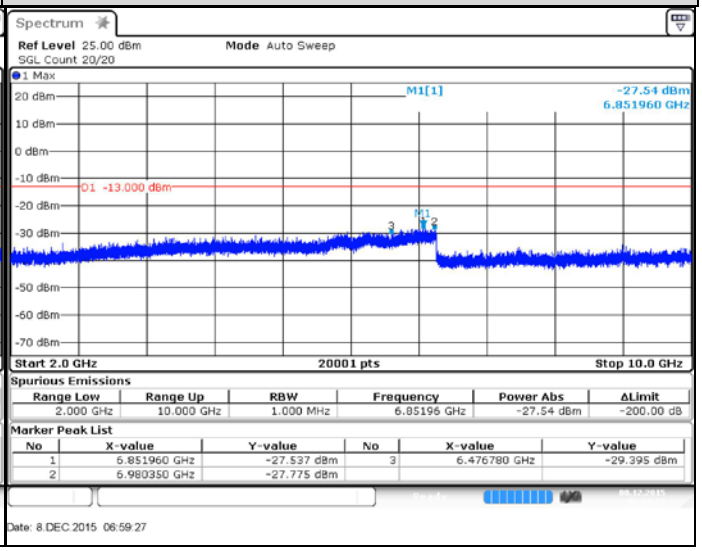


10kHz ~ 20GHz	

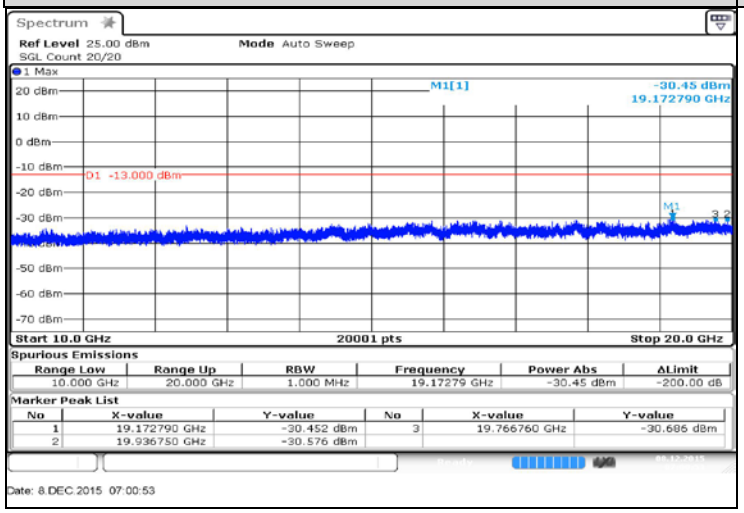


EDGE Class 8 uplink 1 slot -Low Freq (1850.2 MHz)	
9kHz ~ 2GHz	2GHz ~ 10GHz

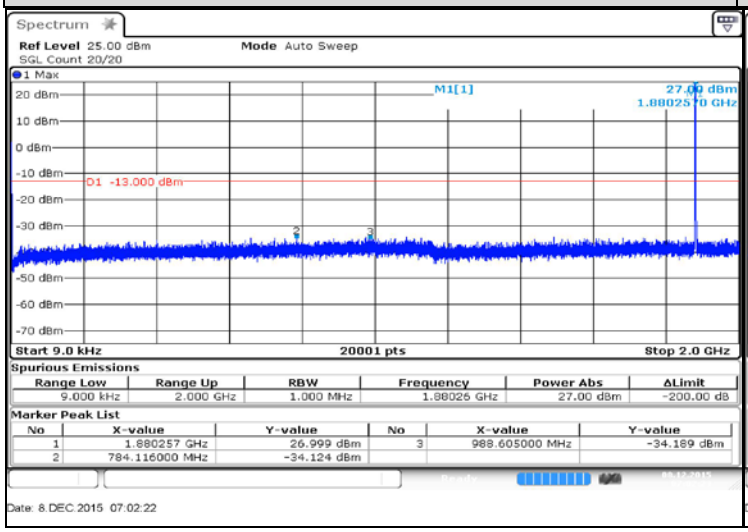


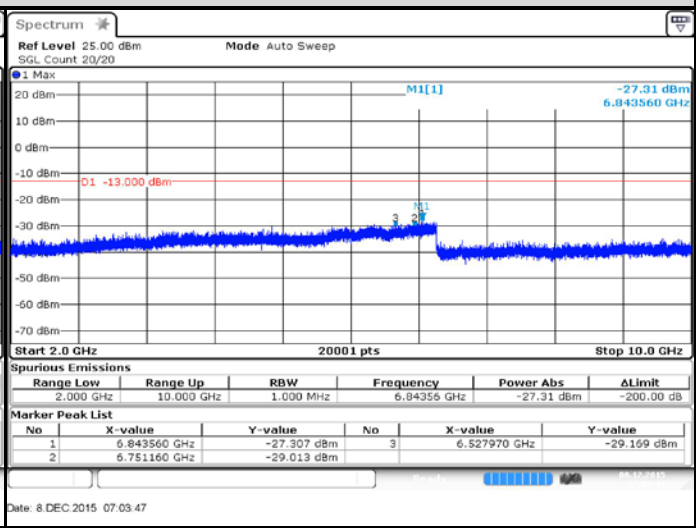


10kHz ~ 20GHz	

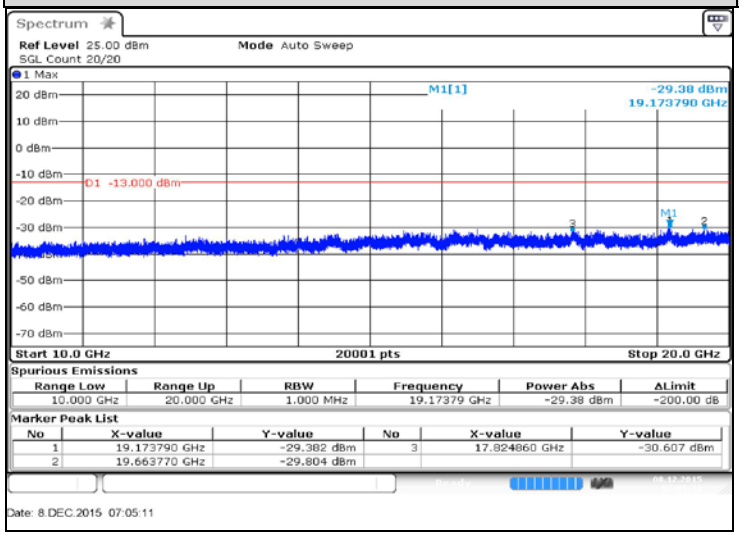


EDGE Class 8 uplink 1 slot -Mid Freq (1880.0 MHz)	
9kHz ~ 2GHz	2GHz ~ 10GHz

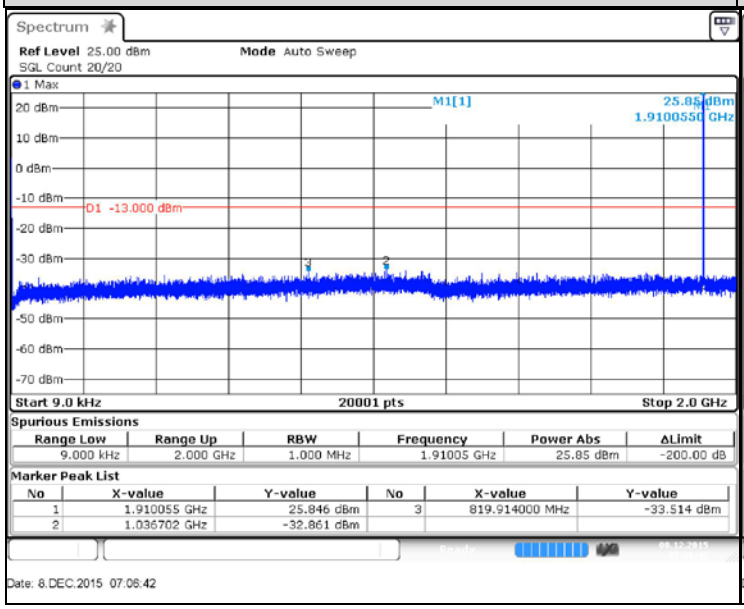


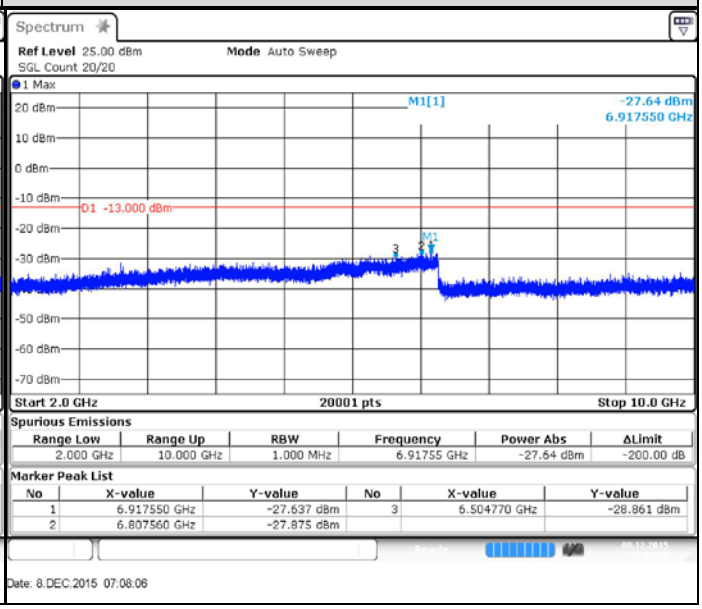


10kHz ~ 20GHz	

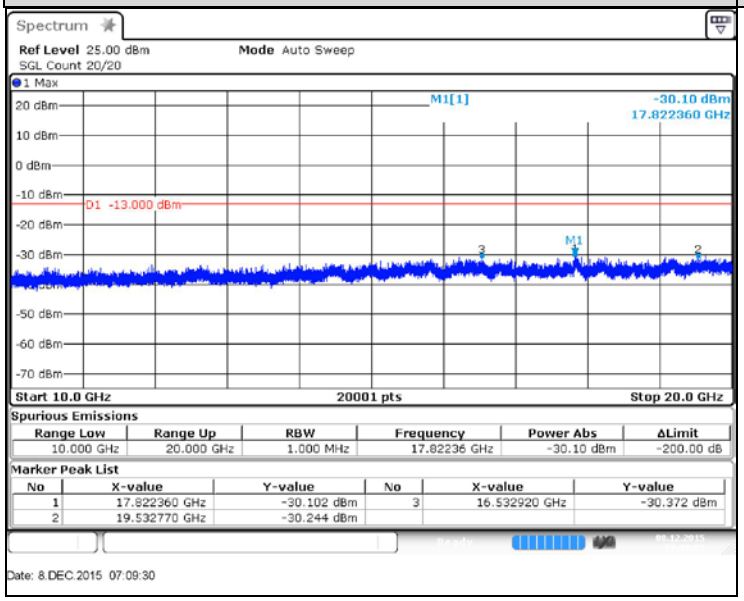


EDGE Class 8 uplink 1 slot - High Freq (1909.8 MHz)	
9kHz ~ 2GHz	2GHz ~ 10GHz



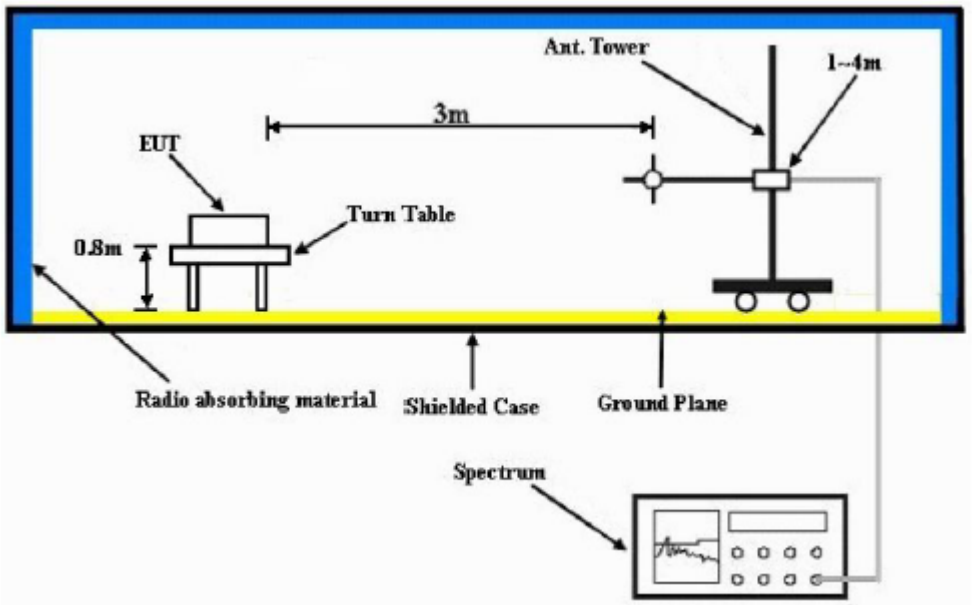


10kHz ~ 20GHz	


Spectrum
Ref Level 25.00 dBm
Mode Auto Sweep
SGL Count 20/20
1 Max
M1[1]
-30.10 dBm
17.822360 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -13.000 dBm
M1
Start 10.0 GHz
20001 pts
Stop 20.0 GHz
Spurious Emissions
Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit
10.000 GHz | 20.000 GHz | 1.000 MHz | 17.82236 GHz | -30.10 dBm | -200.00 dB
Marker Peak List
No | X-value | Y-value | No | X-value | Y-value
1 | 17.822360 GHz | -30.102 dBm | 3 | 16.532920 GHz | -30.372 dBm
2 | 19.532770 GHz | -30.244 dBm
Date: 8.DEC.2015 07:09:30

1.12. Radiated Spurious Emission

1.12.1. Test Setup



1) The spectrum setting for scanning Radiated Emission below 1 GHz is RBW = 100 kHz, VBW = 300 kHz and above 1 GHz is RBW = 1MHz, VBW = 3MHz. Detector mode is positive peak.
2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
4) Final Radiated Spurious Emission = “Read Value” + Measured substitution value.

1.12.2. Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

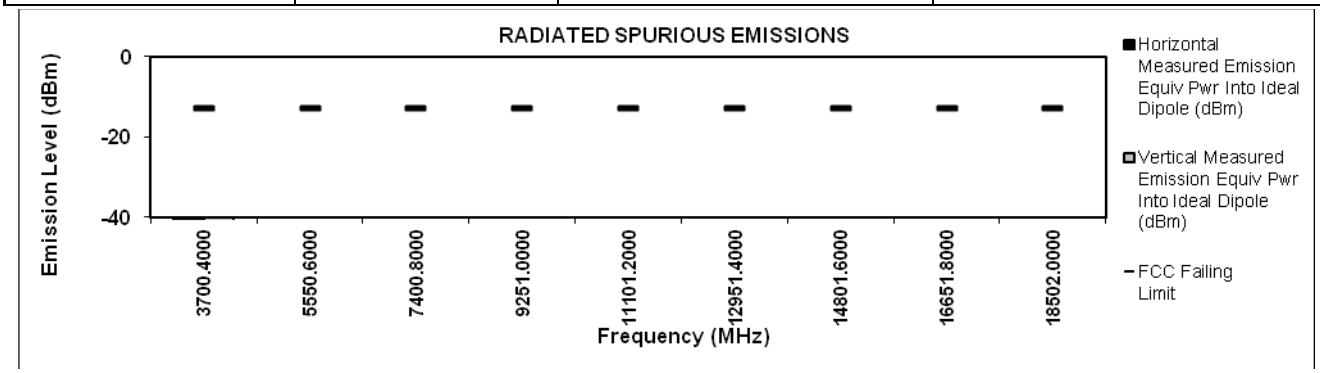
1.12.3. Radiated Spurious Emission – GSM 1900 (1850-1910MHz)

TRANSMITTER RADIATED SPURIOUS EMISSIONS

MODEL #: LEX L10i | **Battery : PMNN4472A, Accy : 3360-HKTN4009A-3, 3360-CB000262A01-3**

1850.2 MHz | **(Low) GSM 1900** | **1 Watt(s)/Max Power** | **S/N: 171PRQ1569**

Frequency (MHz)	FCC Failing Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
3700.4000	-13	**	**
5550.6000	-13	**	**
7400.8000	-13	**	**
9251.0000	-13	**	**
11101.2000	-13	**	**
12951.4000	-13	**	**
14801.6000	-13	**	**
16651.8000	-13	**	**
18502.0000	-13	**	**



The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.
Motorola Penang EMC Lab - Test Performed by: Qawiman/Nazrin **January 19, 2016**
FCC Registration: 772092 **Industry Canada: 109AK**
Remarks: ** **Indicates the spurious emission could not be detected due to noise limitations or ambients.**
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 24.6 Hum(%RH): 68.1

Remarks:

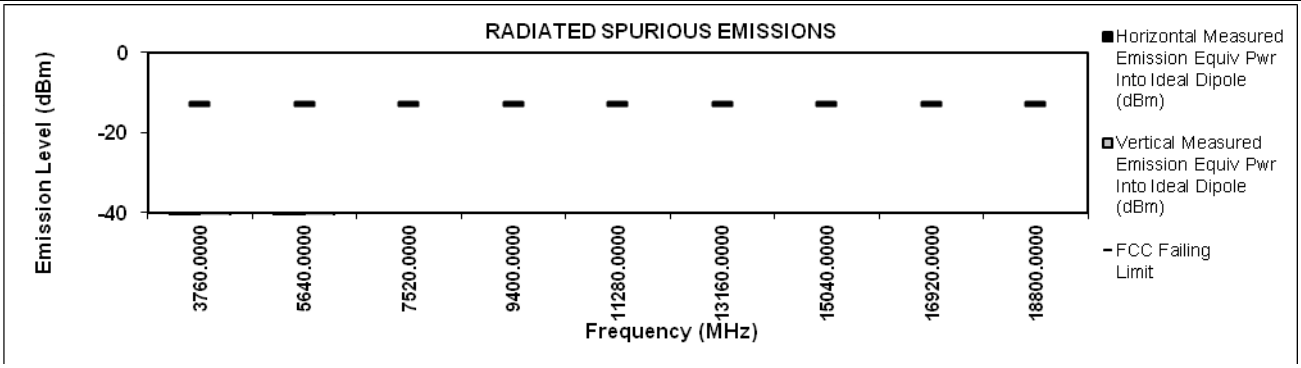
Passed Results	**Marginal Results**	**Failed Results**

TRANSMITTER RADIATED SPURIOUS EMISSIONS

MODEL #: LEX L10i | **Battery : PMNN4472A, Accy : 3360-HKTN4009A-3, 3360-CB000262A01-3**

1880 MHz | **(Mid)** | **GSM 1900** | **1 Watt(s)/Max Power** | **S/N: 171PRQ1569**

Frequency (MHz)	FCC Failing Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
3760.0000	-13	**	**
5640.0000	-13	**	**
7520.0000	-13	**	**
9400.0000	-13	**	**
11280.0000	-13	**	**
13160.0000	-13	**	**
15040.0000	-13	**	**
16920.0000	-13	**	**
18800.0000	-13	**	**



The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.
Motorola Penang EMC Lab - Test Performed by: Qawiman/Nazrin **January 19, 2016**
FCC Registration: 772092 **Industry Canada: 109AK**
Remarks: ** **Indicates the spurious emission could not be detected due to noise limitations or ambients.**
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 24.6 Hum(%RH): 68.1

Remarks:

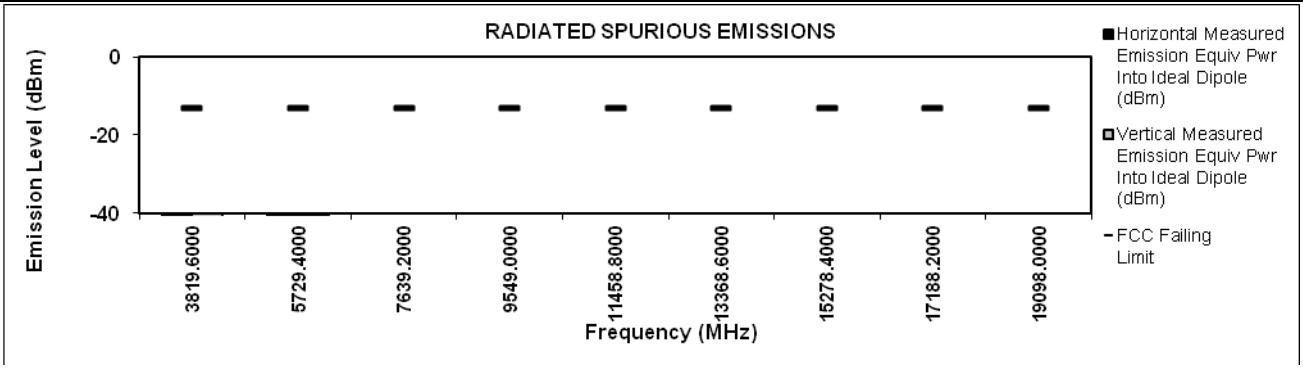
Passed Results	**Marginal Results**	**Failed Results**

TRANSMITTER RADIATED SPURIOUS EMISSIONS

MODEL #: LEX L10i | **Battery : PMNN4472A, Accy : 3360-HKTN4009A-3, 3360-CB000262A01-3**

1909.8 MHz | **(High)** | **GSM 1900** | **1 Watt(s)/Max Power** | **S/N: 171PRQ1569**

Frequency (MHz)	FCC Failing Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
3819.6000	-13	**	**
5729.4000	-13	**	**
7639.2000	-13	**	**
9549.0000	-13	**	**
11458.8000	-13	**	**
13368.6000	-13	**	**
15278.4000	-13	**	**
17188.2000	-13	**	**
19098.0000	-13	**	**



The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.
Motorola Penang EMC Lab - Test Performed by: Qawiman/Nazrin **January 19, 2016**
FCC Registration: 772092 **Industry Canada: 109AK**
Remarks: ** **Indicates the spurious emission could not be detected due to noise limitations or ambients.**
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 24.6 Hum(%RH): 68.1

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

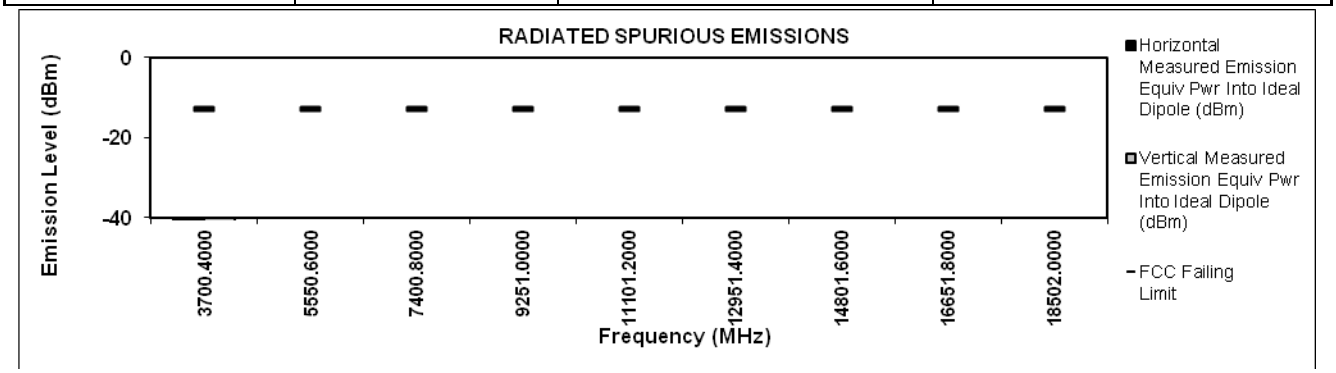
Motorola Solutions.

TRANSMITTER RADIATED SPURIOUS EMISSIONS

MODEL #: LEX L10i | **Battery : PMNN4472A, Accy : 3360-HKTN4009A-3, 3360-CB000262A01-3**

1850.2 MHz | **(Low) EDGE 1900** | **0.5012 Watt(s)/Max Power** | **S/N: 171PRQ1569**

Frequency (MHz)	FCC Failing Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
3700.4000	-13	**	**
5550.6000	-13	**	**
7400.8000	-13	**	**
9251.0000	-13	**	**
11101.2000	-13	**	**
12951.4000	-13	**	**
14801.6000	-13	**	**
16651.8000	-13	**	**
18502.0000	-13	**	**



The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.
Motorola Penang EMC Lab - Test Performed by: Qawiman/Nazrin **January 19, 2016**
FCC Registration: 772092 **Industry Canada: 109AK**
Remarks: ** **Indicates the spurious emission could not be detected due to noise limitations or ambients.**
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 24.6 Hum(%RH): 68.1

Remarks:

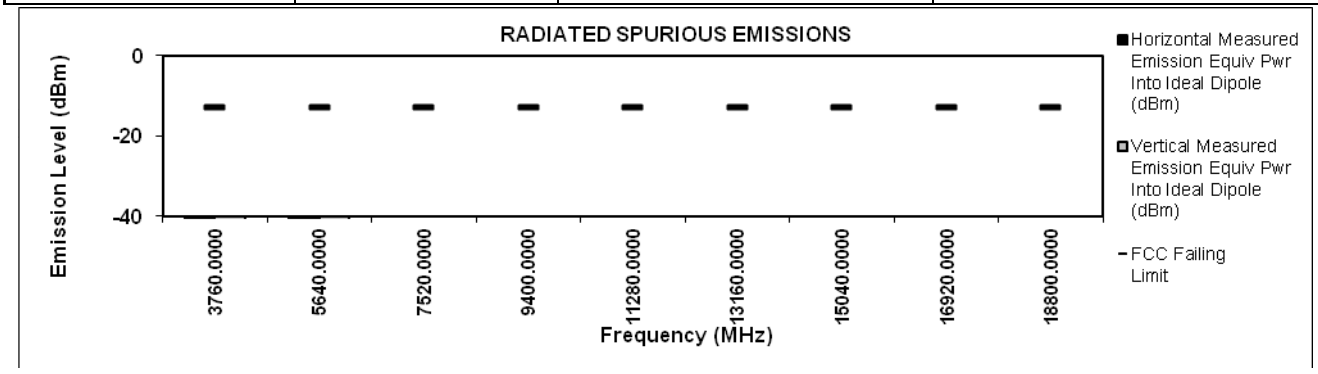
Passed Results	**Marginal Results**	**Failed Results**

TRANSMITTER RADIATED SPURIOUS EMISSIONS

MODEL #: LEX L10i | **Battery : PMNN4472A, Accy : 3360-HKTN4009A-3, 3360-CB000262A01-3**

1880 MHz | **(Mid)** | **EDGE 1900** | **0.5012 Watt(s)/Max Power** | **S/N: 171PRQ1569**

Frequency (MHz)	FCC Failing Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
3760.0000	-13	**	**
5640.0000	-13	**	**
7520.0000	-13	**	**
9400.0000	-13	**	**
11280.0000	-13	**	**
13160.0000	-13	**	**
15040.0000	-13	**	**
16920.0000	-13	**	**
18800.0000	-13	**	**



The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.
Motorola Penang EMC Lab - Test Performed by: Qawiman/Nazrin **January 19, 2016**
FCC Registration: 772092 **Industry Canada: 109AK**
Remarks: ** **Indicates the spurious emission could not be detected due to noise limitations or ambients.**
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 24.6 Hum(%RH): 68.1

Remarks:

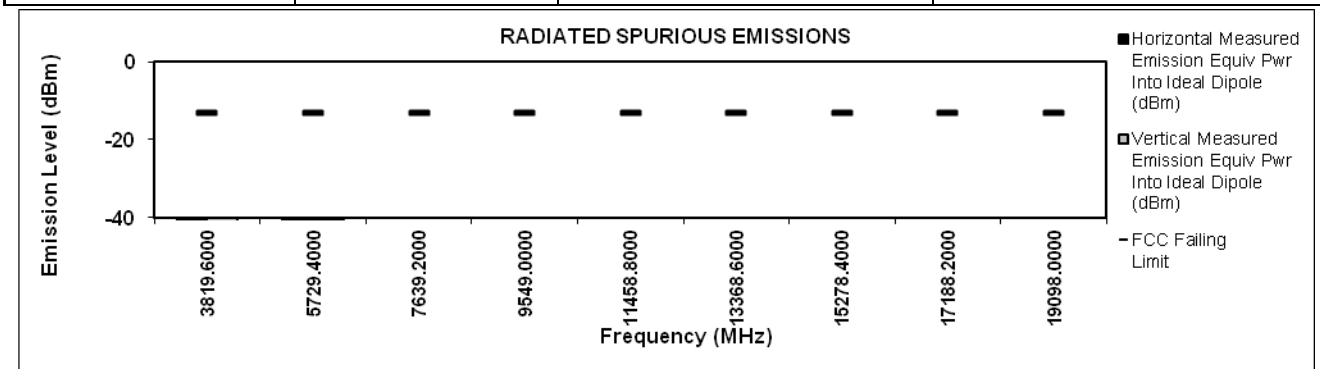
Passed Results	**Marginal Results**	**Failed Results**

TRANSMITTER RADIATED SPURIOUS EMISSIONS

MODEL #: LEX L10i | **Battery : PMNN4472A, Accy : 3360-HKTN4009A-3, 3360-CB000262A01-3**

1909.8 MHz | **(High)** | **EDGE 1900** | **0.5012 Watt(s)/Max Power** | **S/N: 171PRQ1569**

Frequency (MHz)	FCC Failing Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
3819.6000	-13	**	**
5729.4000	-13	**	**
7639.2000	-13	**	**
9549.0000	-13	**	**
11458.8000	-13	**	**
13368.6000	-13	**	**
15278.4000	-13	**	**
17188.2000	-13	**	**
19098.0000	-13	**	**



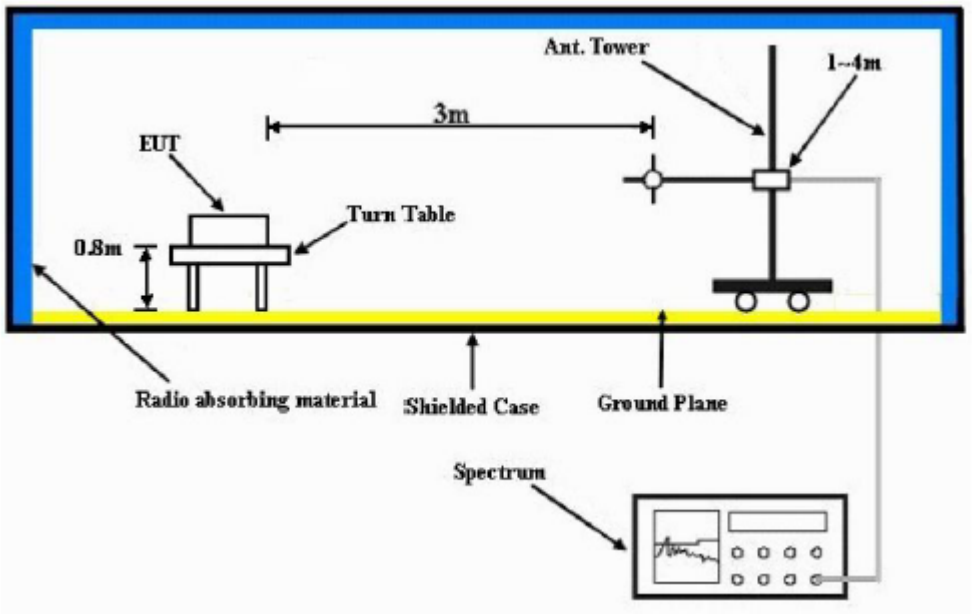
The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.
Motorola Penang EMC Lab - Test Performed by: Qawiman/Nazrin **January 19, 2016**
FCC Registration: 772092 **Industry Canada: 109AK**
Remarks: ** **Indicates the spurious emission could not be detected due to noise limitations or ambients.**
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 24.6 Hum(%RH): 68.1

Remarks:

Passed Results	**Marginal Results**	**Failed Results**

1.13. Equivalent Isotropically Radiated Power (EIRP)

1.13.1. Test Setup



1) The spectrum setting for Equivalent Isotropically Radiated Power (EIRP) is RBW = 100 kHz, VBW = 300 kHz. Detector Mode is RMS.
2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The “Read Value” is the spectrum reading of maximum power value.
3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
4) EIRP = “Read Value” + Measured substitution value + 2.15.

1.13.2. Test Limit

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

1.13.3. Equivalent Isotropically Radiated Power (EIRP) – GSM 1900 (1850-1910MHz)

GSM1900 - Low Freq (1850.2 MHz)

EIRP/ERP

GSM 1900
S/N: 171PRQ1568 **Tx Power: 1 Watts**
SR ID: 03360-EMC-00103
Accessory: 3360-HKTN4009A-3, 3360-CB000262A01-3

Antenna Polarization	Frequency (MHz)	EIRP (dBm)	ERP (dBm)
Horiz.	1850.2	29.95	27.80
Vert.	1850.2	28.49	26.34

GSM1900 - Mid Freq (1880.0 MHz)

EIRP/ERP

GSM 1900
S/N: 171PRQ1568 **Tx Power: 1 Watts**
SR ID: 03360-EMC-00103
Accessory: 3360-HKTN4009A-3, 3360-CB000262A01-3

Antenna Polarization	Frequency (MHz)	EIRP (dBm)	ERP (dBm)
Horiz.	1880	28.65	26.50
Vert.	1880	28.31	26.16

GSM1900 - High Freq (1909.8MHz)

EIRP/ERP

GSM 1900
S/N: 171PRQ1568 **Tx Power: 1 Watts**
SR ID: 03360-EMC-00103
Accessory: 3360-HKTN4009A-3, 3360-CB000262A01-3

Antenna Polarization	Frequency (MHz)	EIRP (dBm)	ERP (dBm)
Horiz.	1909.8	29.04	26.89
Vert.	1909.8	29.05	26.90

EDGE1900 - Low Freq (1850.2 MHz)

EIRP/ERP

EDGE 1900
S/N: 171PRQ1568 **Tx Power: 0.5012 Watts**
SR ID: 03360-EMC-00103
Accessory: 3360-HKTN4009A-3, 3360-CB000262A01-3

Antenna Polarization	Frequency (MHz)	EIRP (dBm)	ERP (dBm)
Horiz.	1850.2	29.83	27.68
Vert.	1850.2	28.50	26.35

EDGE1900 - Mid Freq (1880.0 MHz)

EIRP/ERP

EDGE 1900
S/N: 171PRQ1568 **Tx Power: 0.5012 Watts**
SR ID: 03360-EMC-00103
Accessory: 3360-HKTN4009A-3, 3360-CB000262A01-3

Antenna Polarization	Frequency (MHz)	EIRP (dBm)	ERP (dBm)
Horiz.	1880	28.40	26.25
Vert.	1880	28.53	26.38

EDGE1900 - High Freq (1909.8MHz)

EIRP/ERP

EDGE 1900
S/N: 171PRQ1568 **Tx Power: 0.5012 Watts**
SR ID: 03360-EMC-00103
Accessory: 3360-HKTN4009A-3, 3360-CB000262A01-3

Antenna Polarization	Frequency (MHz)	EIRP (dBm)	ERP (dBm)
Horiz.	1909.8	28.95	26.80
Vert.	1909.8	30.18	28.03