

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E REQUIREMENT

	OF
Product Name:	Tablet
Brand Name:	HP
Model No.:	HSN-I07C
Model Difference:	N/A
FCC ID:	B94HNI07CWR2
Report No.:	ER/2016/B0100
Issue Date:	Dec. 27, 2016
FCC Rule Part:	2 , 22H & 24E
Prepared for:	HP Inc. 3390 East Harmony Road Fort Collins, Colo- rado 80528 United States
Prepared by:	SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

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VERIFICATION OF COMPLIANCE

Applicant:	HP Inc. 3390 East Harmony Road Fort Collins, Colorado 80528 United States
Product Name:	Tablet
Brand Name:	HP
Model No.:	HSN-I07C
Model Difference:	N/A
FCC ID:	B94HNI07CWR2
File Number:	ER/2016/B0100
Date of test:	Nov. 18, 2016 ~ Dec. 16, 2016
Date of EUT Received:	Nov. 18, 2016

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-D-2010 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Marcus Tseng	Date:	Dec. 27, 2016
Prepared By:	Marcus Tseng/Sr. Engineer Utoletta Tang	Date:	Dec. 27, 2016
Approved By: _	Violetta Tang / Clerk Jim Chang / Asst. Manager	Date:	Dec. 27, 2016

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Revision History

Report Number	Revision	Description	Issue Date
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1. GENERAL PRODUCT INFORMATION

1.1. Product Description

General:

Product Name:	Tablet			
Brand Name:	HP			
Model No.:	HSN-I07C			
Model Difference:	N/A			
Hardware Version:	N/A			
Software Version:	N/A			
WWAN Module:	Model No.: H380-GL, Supplier: FIBOCOM Wireless Inc.			
Keyboard:	 Model No.: HSN-D06K, Supplier: HP Model No.: HSTNN-I72K, Supplier: HP 			
	7.7Vdc from Rechargeable Li-polymer Battery or 5 / 9 / 10 / 12 / 15 / 20 Vdc from AC/DC Adapter			
Power Supply:	Battery: Model No.: HSTNN-UB7E, Supplier: SAMSUNG SDI Co., Ltd.			
r ower Supply.	Adapter:1. Model No.: TPN-CA06, Supplier: CHICONY POWER TECHNOLOGY (CHONGQING) CO., LTD.2. Model No.: TPN-AA03, Supplier: Acbel Electronic (Wu- han) Co., Ltd.			

GPRS / WCDMA:

	Operating Frequency	Rated Power	
	GPRS 850	824.2 MHz– 848.8 MHz	33dBm
	EDGE 850	824.2 MHz– 848.8 MHz	27dBm
Cellular Phone Standards Frequency Range and Power	GPRS 1900	PRS 1900 1850.2MHz – 1909.8MHz	
	EDGE 1900	1850.2MHz – 1909.8MHz	26dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band II	1852.4MHz – 1907.6MHz	24dBm
	WCDMA/HSUPA/HSDPA /HSPA+ Band V	826.4MHz - 846.6MHz	24dBm
IMEI	860558030009860		

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Type of Emission:

Frequency Band	Type of Emission:
GPRS 850	246KGXW
EDGE 850	248KG7W
GPRS 1900	246KGXW
EDGE 1900	249KG7W
WCDMA Band II	4M06F9W
WCDMA Band V	4M06F9W
HSDPA Band II	4M06F9W
HSDPA Band V	4M06F9W
HSUPA Band II	4M07F9W
HSUPA Band V	4M06F9W

Max ERP/EIRP Power Measurement Result:

	dBm		W
GPRS 850	19.15	ERP	0.082
EDGE 850	21.66	ERP	0.147
GPRS 1900	24.72	EIRP	0.296
EDGE 1900	24.22	EIRP	0.264
WCDMA Band II	21.81	EIRP	0.152
WCDMA Band V	20.73	ERP	0.118
HSDPA Band II	22.67	EIRP	0.185
HSDPA Band V	20.35	ERP	0.108
HSUPA Band II	21.67	EIRP	0.147
HSUPA Band V	20.75	ERP	0.119



1.2. Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22, 24

ANSI / TIA / EIA 603-D-2010

KDB971168 D01 Power Meas license Digital System

KDB941225 of the Output power Procedure of (SAR Measurement Procedures for 3G Devices, WCDMA / HSPA) was used for EUT and Base station setting.

TS 151 010-1 is used to set, and measure the output power.

Note:

All test items have been performed and record as per the above standards.

1.3. Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan. (TAF code 0513)

FCC Registration Numbers are: 509634

Canada Registration Number: 4620A-5.

1.4. Special Accessories

No special accessories were used during testing.

1.5. Equipment Modifications

There were no modifications incorporated into the EUT.

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2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT (Transmitter) was operated in the continuous transmission mode employed with the simulator of the Base Station that fixates at test default channels to fix the Tx frequency which was for the purpose of the measurements.

2.3. Test Procedure

2.3.1 Conducted Measurement at Antenna Port

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

According to measurement procured TIA/EIA 603C, The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 8 and 13.

2.4. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenua-

tion factor between EUT conducted port and spectrum analyzer. With the offset compensation,

the spectrum analyzer reading level is exactly EUT RF output level.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation example with cable loss 0.4 dB for low band and 0.8 dB for high band with 10 dB attenuator and 3.2 splitter

Low Band: Offset = RF cable loss (dB)+ attenuation factor(dB) =0.4+10+3.2=13.6(dB)High Band: Offset = RF cable loss (dB)+ attenuation factor(dB) =0.8+10+3.2=14(dB)

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2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	7.7 Vdc	525
GPRS 1900	7.7 Vdc	536
EDGE 850	7.7 Vdc	485
EDGE 1900	7.7 Vdc	515
WCDMA Band II	7.7 Vdc	720
WCDMA Band V	7.7 Vdc	660
HSUPA Band II	7.7 Vdc	735
HSUPA Band V	7.7 Vdc	655
HSDPA Band II	7.7 Vdc	752
HSDPA Band V	7.7 Vdc	631

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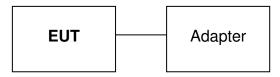
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2.6. Configuration of Tested System Fig. 2-1 Configuration of Tested System (Fixed Channel-Conducted)

DC Power Supply		EUT		Spectrum Analyzer		CMU200
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Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)



Remote Side

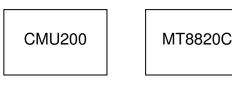


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/	Series No.	Data Cable	Power Cord
			Type No.			
1.	Universal Radio Communication Tester	R&S	CMU200	102189	shielded	Un-shielded
2.	Universal Radio Communication Tester	Anritsu	MT8820C	6200995019	shielded	Un-shielded

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occuupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Compliant
§24.232(d)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §22.355 §24.235	Frequency Stability	Compliant



4. DESCRIPTION OF TEST MODES

4.1. The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X(E1)Y(E2)Z(H) axis and antenna ports. The worst case was found as listed below. Following channel(s) was (were) selected for the final test as listed below:

BAND	ERP/EIRP	RADIATED EMISSION
GSM/GPRS/EDGE 850	E2-plan	E2-plan
GSM/GPRS/EDGE 1900	E2-plan	E2-plan
WCDMA/HSPA Band II	E2-plan	E2-plan
WCDMA/HSPA Band V	E2-plan	E2-plan

GSM/GPRS/EDGE MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	128 to 251	128, 190, 251	GSM/GPRS/EDGE 850
EIRP	512 to 810	512, 661, 810	GSM/GPRS/EDGE 1900
FREQUENCY STABILITY	128 to 251	190	GPRS 850
	512 to 810	661	GPRS 1900
OCCUPIED BANDWIDTH	128 to 251	190	GSM/GPRS/EDGE 850
	512 to 810	661	GSM/GPRS/EDGE 1900
PEAK TO AVERAGE RATIO	128 to 251	128, 190, 251	GSM/GPRS/EDGE 850
	512 to 810	512, 661, 810	GSM/GPRS/EDGE 1900
BAND EDGE	128 to 251	128, 251	GSM/GPRS/EDGE 850
	512 to 810	512, 810	GSM/GPRS/EDGE 1900
CONDCUDETED EMISSION	128 to 251	128, 190, 251	GSM/GPRS/EDGE 850
	512 to 810	512, 661, 810	GSM/GPRS/EDGE 1900
RADIATED EMISSION	128 to 251	128, 190, 251	EDGE 850
	512 to 810	512, 661, 810	GPRS 1900

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WCDMA/HSPA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band V
EIRP	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band II
FREQUENCY	4132 to 4233	4183	WCDMA Band II
STABILITY	9262 to 9538	9400	WCDMA Band V
OCCUPIED	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band II
BANDWIDTH	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band V
PEAK TO AVERAGE	4132 to 4233	4132, 4183, 4233	WCDMA/HSPA Band II
RATIO	9262 to 9538	9262, 9400, 9583	WCDMA/HSPA Band V
BAND EDGE	4132 to 4233	4132, 4233	WCDMA Band II
BAND EDGE	9262 to 9538	9262, 9583	WCDMA Band V
CONDCUDETED	4132 to 4233	4132, 4183, 4233	WCDMA Band II
EMISSION	9262 to 9538	9262, 9400, 9583	WCDMA Band V
RADIATED EMISSION	4132 to 4233	4132, 4183, 4233	HSDPA Band II
TADIATED EMISSION	9262 to 9538	9262, 9400, 9583	HSUPA Band V



5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1.10 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 4.74dB Horizontal Polarization =+/- 4.62dB
99% Occupied Bandwidth	+/- 5.19 Hz
Out of Band Emissions at Antenna	+/- 0.70 dB
Terminals and Band Edge	
Peak to Average Ratio	+/- 0.70 dB
Frequency Stability vs. Temperature	+/- 5.19 Hz
Frequency Stability vs. Voltage	+/- 5.19 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%

Radiated Spurious Emission:

Management	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 180MHz: +/- 3.37dB
Measurement uncertainty (Polarization : Vertical)	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Maaauramantunaartaintu	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty (Polarization : Horizontal)	167MHz -500MHz: +/- 3.44dB
(Folanzation : Honzontal)	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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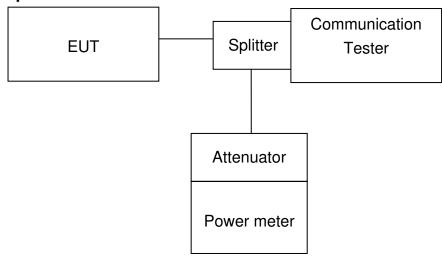


6. RF CONDUCTED OUTPUT POWER MEASUREMENT

6.1. Standard Applicable

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals.

6.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

6.3. Measurement Procedure

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. TS 151 010-1 is reference to conduct the test measurement of output power.

The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, (WCDMA/HSPA) was used for EUT and Base station setting. RMC 12.2kps is used for this testing, and KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results

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6.4. Measurement Equipment Used

SGS Conducted Room								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
Power Meter	Anritsu	ML2495A	1005007	12/15/2015	12/14/2016			
Power Sensor	Anritsu	MA2411B	917032	12/15/2015	12/14/2016			
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017			
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017			
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017			
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017			
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017			
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017			
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017			
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/24/2016	09/23/2017			



6.5. Measurement Result **RF Conducted Output Power** GPRS/EDGE (GMSK; 8-PSK) Result:

EUT Mode	Frequency (MHz)	СН	Average Burst Power (1DN 1UP) (dBm)	Average Burst Power (1DN 2UP) (dBm)	Average Burst Power (1DN 3UP) (dBm)	Average Burst Power (1DN 4UP) (dBm)
	824.2	128	31.53	29.46	28.1	26.52
GPRS	836.6	190	31.51	29.32	27.98	26.4
850	848.8	251	31.52	29.42	28.08	26.49
	1850.2	512	29.44	27.21	25.93	24.37
GPRS 1900	1880.0	661	29.36	27.18	25.91	24.32
1900	1909.8	810	29.5	27.32	26.05	24.47
FDOF	824.2	128	26.15	23.82	22.63	21.02
EDGE 850	836.6	190	26.1	23.81	22.5	20.96
000	848.8	251	26.14	23.84	22.63	21.05
	1850.2	512	25.37	23.19	22.34	20.81
EDGE 1900	1880.0	661	25.36	23.14	22.32	20.78
1000	1909.8	810	25.51	23.32	22.48	20.93



WCDMA MODE:

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.4.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

Results:

EUT Mode		WCDMA Band II	HSDPA Band II	HSUPA Band II
Frequency	СН	Avg. Power	Avg. Power	Avg. Power
(MHz)	(MHz)		(dBm)	(dBm)
1852.4	9262	24.49	23.3	23.29
1880.0	9400	24.25	23.08	23.12
1907.6	9538	24.18	23.16	23.1

EUT Mode		WCDMA Band V	HSDPA Band V	HSUPA Band V
Frequency	СН	Avg. Power	Avg. Power	Avg. Power
(MHz)		(dBm)	(dBm)	(dBm)
826.4	4132	23.44	22.37	22.4
836.6	4183	23.64	22.45	22.58
846.6	4233	23.36	22.3	22.32

Note: The results above reflect max power with all up bits.

Cable loss offset Low Band: 0.4dB, Cable loss offset High Band: 0.8dB

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HSDPA Release 6 MODE:

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing.

HSDPA SUB-TEST Setting

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	β _c	β _d	β _d (SF)	β _c /β _d	βнs (<i>Note1,</i> <i>Note 2</i>)	CM (dB) (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

Note: The recommended HSDPA MPRs are implemented as per following sub-tests.

Results:

Mode	Sub-test	Avg. Power (dBm) Channel		lBm)	Power Class 3 Lim- itation (dBm)	Comments
		9262	9400	9538		
	1	24.66	24.14	24.04	20.3dBm – 25.7dBm	Pass
HSDPA	2	24.37	24.11	24.03	20.3dBm – 25.7dBm	Pass
(Band II)	3	24.18	23.69	23.51	19.8dBm – 25.7dBm	Pass
	4	24.25	23.7	23.63	19.8dBm – 25.7dBm	Pass

Mode	Sub-test	Avg. Power (dBm) Channel			Power Class 3 Lim- itation (dBm)	Comments
		4132	4183	4233		
	1	23.61	23.53	23.22	20.3dBm – 25.7dBm	Pass
HSDPA	2	23.32	23.5	23.21	20.3dBm – 25.7dBm	Pass
(Band V)	3	23.13	23.08	22.69	19.8dBm – 25.7dBm	Pass
	4	23.2	23.09	22.81	19.8dBm – 25.7dBm	Pass

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HSPA (HSDPA & HSUPA) Release 6 MODE

The following 5 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing **HSPA SUB-TEST Setting**

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)

Sub- test	βc	βd	β _d (SF)	βc/βd	βнs	β _{ec}	β_{ed}	β _{ed} (SF)	β _{ed} (Code s)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/22 5	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	β _{ed} 1: 47/15 β _{ed} 2: 47/15		2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

Note: The recommended HSUPA MPRs are implemented as per following sub-tests.

Results:

Mode	Sub-test	-	Power (d Channel	lBm)	Power Class 3 Lim- itation (dBm)	Comments
		9262	9400	9538		
	1	24.41	24.23	24.12	18.8dBm – 25.7dBm	Pass
	2	22.46	22.3	22.16	16.8dBm – 25.7dBm	Pass
HSUPA	3	23.47	23.25	23.2	17.8dBm – 25.7dBm	Pass
(Band II)	4	22.59	22.35	22.2	16.8dBm – 25.7dBm	Pass
	5	24.3	24.09	24.03	18.8dBm – 25.7dBm	Pass

Mode	Sub-test	•	Power (d Channel	IBm)	Power Class 3 Lim-	Comments
		4132	4183	4233	itation (dBm)	
	1	23.36	23.62	23.3	18.8dBm – 25.7dBm	Pass
	2	21.41	21.69	21.34	16.8dBm – 25.7dBm	Pass
HSUPA	3	22.42	22.64	22.38	17.8dBm – 25.7dBm	Pass
(Band V)	4	21.54	21.74	21.38	16.8dBm – 25.7dBm	Pass
	5	23.25	23.48	23.21	18.8dBm – 25.7dBm	Pass

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WCDMA/HSDPA/HSUPA Band II / V

The EUT output power was controlled by simulator. Set Communication Tester CMU200 function key "UE Power Control" and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm. Then record the read (see page 21 for measurement data). The min. power was measures by a function key "minimum power" then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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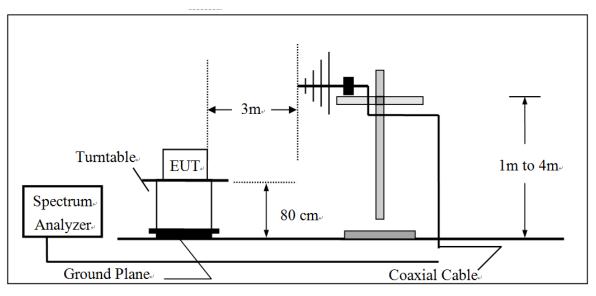
7. EFFECTIVE RADIATED POWER AND EQUIVALENT ISOTROPIC RADIATED POWER MEASUREMENT

7.1. Standard Applicable

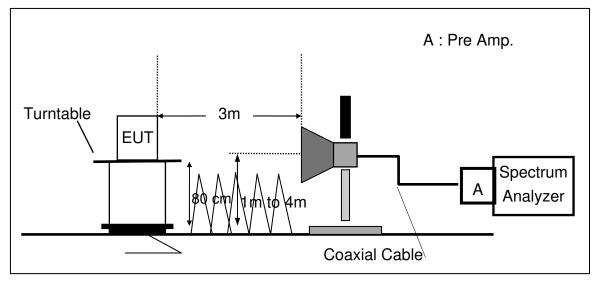
According to FCC §2.1046 FCC 22.913(a) Mobile station is limited to 7W ERP. FCC 24.232(b) Mobile and portable stations are limited to 2 W EIRP.

7.2. Test SET-UP

(A) Radiated Power Test Set-Up, Frequency Below1000MHz



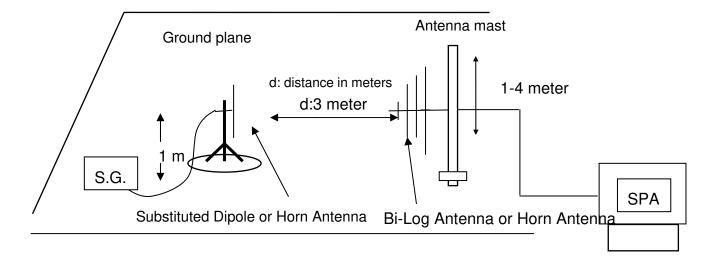
(B) Radiated Power Test Set-UP Frequency Over 1 GHz



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(C) Substituted Method Test Set-UP





7.3. Measurement Procedure

- The testing follows the Measurement Procedure of FCC KDB 971168 D01
- 2. The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.
- 3. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated
- The testing follows the Measurement Procedure of FCC KDB 971168 D01
- 5. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G.
- 6. ERP = S.G. output (dBm) + Antenna Gain (dBd) Cable Loss (dB)
- 7. ERP = S.G. output (dBm) + Antenna Gain (dBd) Cable Loss (dB)
- 8. Spectrum setting:

(1) Detector = Peak, marker the highest value of the detector by maximum hold, set RBW wide enough to capture the entire signal of emission, and VBW > =3xRBW.

(2) KDB 971168 D01 is adopted, and the procedure as lists under item 4, Measurement of the Average Power over the Fundamental Signal Bandwidth, is followed to set correspondingly for the acquisition of proper measurement data.

Set frequency = nominal signal center frequency;

Set span = 2 X occupied BW;

Set RBW ≈ 1~5% of the span, not to exceed 1 MHz

Set $VBW = 3 \times RBW$:

Select average power (RMS) detector

Set sweep time and number of measurement points to achieve a minimum of 1 millisecond/pt integration time (ex. Point = 601 points, then sweet time = $601*10^{-3}$ = 6s.

Activate trace averaging routine over a minimum of 10 sweeps;

Activate marker/span pair and set span = signal or channel bandwidth;

Activate the band/interval power marker function;

Record the band power level:

Record adjusted value as the average signal power level. Then activate the occupied bandwidth measurement function.

The proper adjustment due to limitation of spectrum capability is given compensated to spectrum with conversion factor of 10*log (TBW/RBW), where TBW is the transmission of UE exceeding the maximum BW UE can extends, and RBW is the resolution BW in UE.

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7.4. Measurement Equipment Used

	•••	SGS FAC-I			
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV-30	101398	10/05/2016	10/04/2017
Bi-log Antenna	SCHWAZBECK	VULB9160	9160-3158	10/28/2016	10/27/2017
Bi-log Antenna	SCHWAZBECK	VULB9168	300	12/16/2015	12/15/2016
Horn antenna	ETS.LINDGREN	3117	143279	11/14/2016	11/13/2017
Horn antenna	ETS.LINDGREN	3117	123991	12/12/2016	12/11/2017
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017
Horn Antenna	Schwarzbeck	BBHA9170	185	07/18/2016	07/17/2017
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M1	01/02/2016	01/01/2017
Pre-Amplifier	HP	8447F	3113A06892	01/02/2016	01/01/2017
Pre-Amplifier	HP	8449B	3008A01973	01/02/2016	01/01/2017
Network Analyze	Anritsu	MS4644A	1216312	05/26/2016	05/25/2017
Signal Generator	Agilent	E4438C	MY45093613	07/07/2016	07/06/2017
Low Loss Cable	Huber Suhner	SUCOFLEX 104EPA	1166TX	01/02/2016	01/01/2017
Low Loss Cable	Huber Suhner	SUCOFLEX 104EPA	1166RX	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	3	01/02/2016	01/01/2017
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Site Cal	SGS	1166 chamber	N/A	01/02/2016	01/01/2017
Filter 800-1000	Micro-Tronics	EWT	M1	01/02/2016	01/01/2017
Filter 1800-2000	Micro-Tronics	EWT	M1	01/02/2016	01/01/2017
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	01/02/2016	01/01/2017
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	01/02/2016	01/01/2017
Radio Communica- tion Analyer	Anritsu	MT8820C	6201465317	12/10/2016	12/09/2017



7.5. Measurement Result: (Peak) –using option of peak measurement

EUT				Measurement					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output		Cable Loss	ERP	Limit	



	EUT		Measurement					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output		Cable Loss	EIRP	Limit



	EUT		Measurement					
Operation Band	Fundamental Frequency	СН	Antenna Pol.	S.G. Output		Cable Loss	EIRP	Limit



EUT		Measurement					
Operation Fundamental Band Frequency	СН	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit

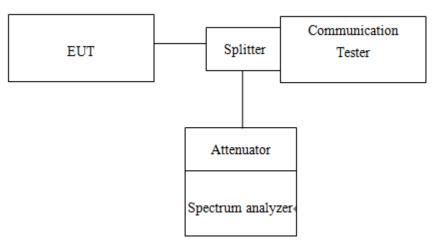


8. OCCUPIED BANDWIDTH MEASUREMENT

8.1. Standard Applicable

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power.

8.2. Test Set-up



8.3. Measurement Procedure

99% &26dB Bandwidth with detector peak

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -26dBc display line was placed on the screen (or 26dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW= 1%, VBW= 3 RBW, with span > 2 * Signal BW, set % Power = 99%.

99% Bandwidth with detector sample

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about $1\% \sim 5\%$ of emission BW, VBW= 3 times RBW, -20dBc display line was placed on the screen (or 20dB bandwidth). Set RBW to 99% bandwidth, RBW= $1\% \sim 5\%$, VBW= 3 RBW, with span > 2 * Signal BW, set % Power = 99%.

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8.4. Measurement Equipment Used

	SGS Co	onducted Ro	om		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/15/2015	12/14/2016
Power Sensor	Anritsu	MA2411B	917032	12/15/2015	12/14/2016
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/24/2016	09/23/2017



8.5. Measurement Result

Freq. (MHz)	СН	99% BW (MHz) GPRS 850	99% BW (MHz) EDGE 850	26 dB BW (MHz) GPRS 850	26 dB BW (MHz) EDGE 850
824.2	128	0.24161	0.24551	0.3181	0.3216
836.6	190	0.24178	0.24551	0.3217	0.3048
848.8	251	0.24573	0.24784	0.3157	0.3122

Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	
		GPRS	EDGE	GPRS	EDGE	
		1900	1900	1900	1900	
1850.2	512	0.24183	0.2452	0.3212	0.3143	
1880.0	661	0.24475	0.24879	0.3185	0.3165	
1909.8	810	0.24572	0.24467	0.3233	0.3169	

Freq. (MHz)	СН	99%	99%	99%	26 dB	26 dB	26 dB
		BW	BW	BW	BW	BW	BW
		(MHz)	(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
		WCDMA	HSDPA	HSUPA	WCDMA	HSDPA	HSUPA
			11		11	11	
1850.20	9262	4.0580	4.0460	4.0655	4.615	4.590	4.621
1850.20 1880.00	9262 9400	4.0580 4.0561		4.0655 4.0650	4.615 4.609		

Freq. (MHz)	СН	99% BW (MHz)	99% BW (MHz)	99% BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)	26 dB BW (MHz)
		WCDMA	HSDPA	HSUPA	WCDMA	HSDPA	HSUPA
		V	V	V	V	V	V
826.40	4132	4.0567	4.0513	4.0566	4.611	4.622	4.616
836.60	4183	4.0574	4.0584	4.0584	4.616	4.610	4.615
846.60	4233	4.0530	4.0493	4.0472	4.591	4.606	4.576



99% & 26dB Bandwidth Test Data (Detector Peak) GPRS 850 Channel Low



GPRS 850 Channel Mid



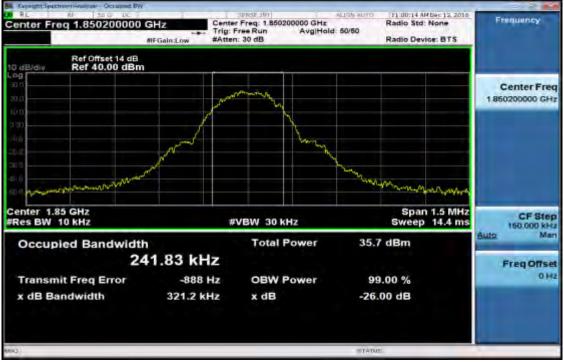
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GPRS 850 Channel High



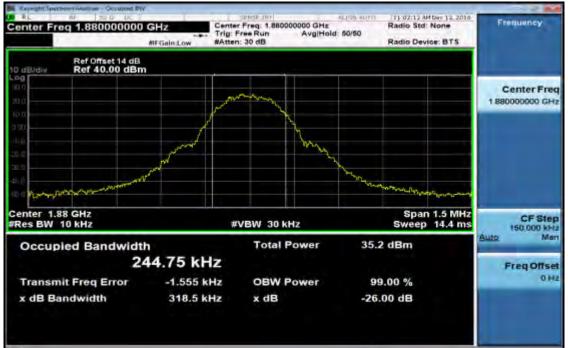
GPRS 1900 Channel Low



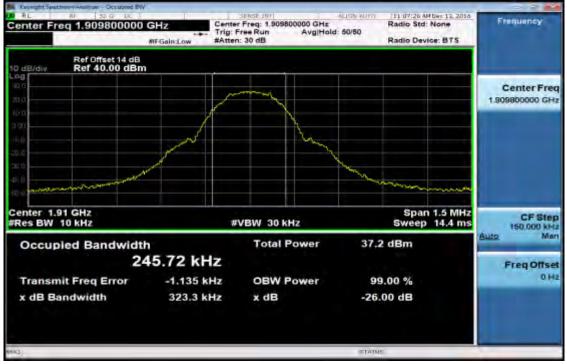
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GPRS 1900 Channel Mid



GPRS 1900 Channel High



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EDGE 850 Channel Low



EDGE 850 Channel Mid



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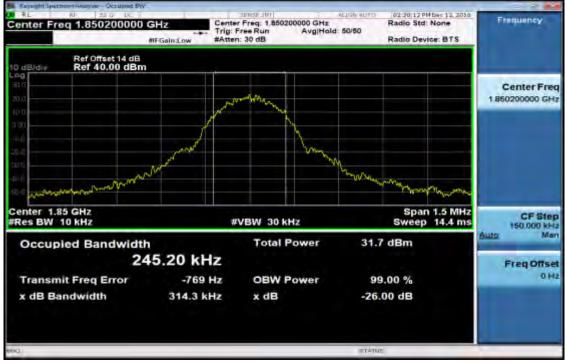
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EDGE 850 Channel High



EDGE 1900 Channel Low



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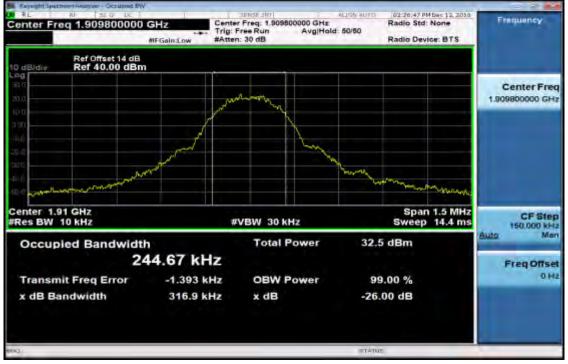
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EDGE 1900 Channel Mid



EDGE 1900 Channel High



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WCDMA II Channel Low



WCDMA II Channel Mid



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WCDMA II Channel High



HSDPA II Channel Low



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HSDPA II Channel Mid



HSDPA II Channel High



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HSUPA II Channel Low



HSUPA II Channel Mid



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HSUPA II Channel High

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WCDMA V Channel Low



WCDMA V Channel Mid



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WCDMA V Channel High



HSDPA V Channel Low



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HSDPA V Channel Mid



HSDPA V Channel High



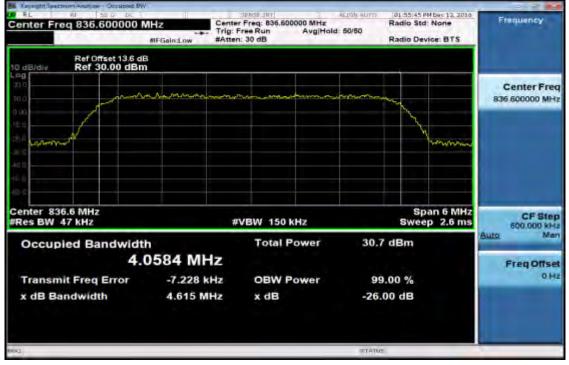
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HSUPA V Channel Low



HSUPA V Channel Mid



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HSUPA V Channel High

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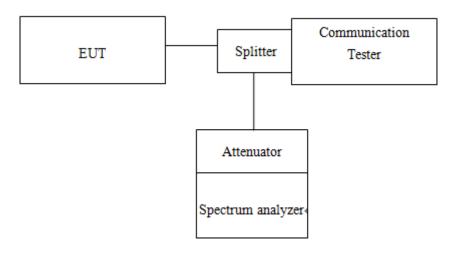


9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

9.1. Standard Applicable

FCC §22.917(a), §24.238(a), the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm).

9.2. Test SET-UP



9.3. Measurement Procedure

Conducted Emission

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
- 3. Allow trace to fully stabilize
- 4. Repeat above procedures until all default test channel measured were complete.

Band Edge

- 1. To connect Antenna Port of EUT to Spectrum.
- The band edge of low and high channels for the highest RF powers was measured. Setting RBW ≥ 1% EBW.
- 3. Allow trace to fully stabilize
- 4. Repeat above procedures until all default test channel measured were complete.

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9.4. Measurement Equipment Used

	SGS Co	onducted Ro	om		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Power Meter	Anritsu	ML2495A	1005007	12/15/2015	12/14/2016
Power Sensor	Anritsu	MA2411B	917032	12/15/2015	12/14/2016
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017
Temperature Chamber	TERCHY	MHG-120LF	911009	05/17/2016	05/16/2017
Radio Communication Analyzer	R&S	CMU200	102189	02/11/2016	02/10/2017
Radio Communication Analyzer	Anritsu	MT8820C	6200995019	09/24/2016	09/23/2017

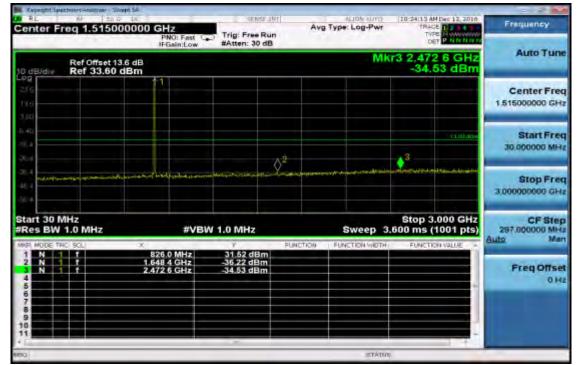
9.5. Measurement Result:

Refer to next pages.

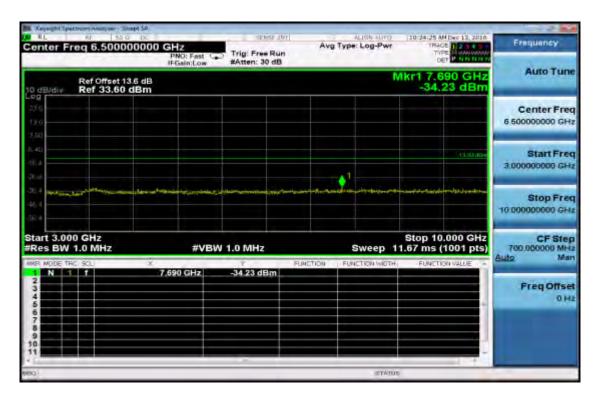
NOTE: The occurrence of the spike on the conducted emission is the signal of the fundamental emission.

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Out of Band emission at antenna terminals – GPRS 850 Channel Lowest



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enter Freq 1.515000000	PNO: Fast G	Trig: Free Run #Atten: 30 dB	Avg Type:		TRACE 12,2016 TRACE 12,14 2 1 TYPE PLOYNER	Frequency
Ref Offset 13.6 dB Mkr3 2,509 8 GHz 0 dB/div Ref 33.60 dBm -35,00 dBm						Auto Tune
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5 4D 10 4			2		(1.00 db)	Start Free 30,000000 MH
36: 4 46: 4 56: 4		X		1944 (P-44) (P-4	and a state of the	Stop Free 3.000000000 GH
Start 30 MHz Res BW 1.0 MHz MR MODE TRO SOL X		and the second se		weep 3,600 n	p 3.000 GHz ns (1001 pts) NCTION VALUE	CF Ster 297.000000 MH Auto Ma
2 N 1 T 1	837.8 MHz 673 2 GHz 609 8 GHz	31.44 dBm -35.46 dBm -35.00 dBm			-	Freq Offse 0 H
8						

Out of Band emission at antenna terminals – GPRS 850 Channel Mid

Keynight Span	etnum Anutyzer - S/	wept SA 2 DC	SINSI JA		N.104 MITO	10-28:38 AM Dec 12, 2016	
		00000 GHz PNO: Fast IFGain:Low		Ave	Type: Log-Pwr	TRACE 2 2 4 4 TVPE PLANAUMON DET PLANAUMON	Frequency
0 dB/div	Ref Offset 1 Ref 33.60				N	1kr1 3.805 GHz -34.14 dBm	
99 176 130							Center Fre 6 500000000 GH
40 6 A	.1					11.00 (00)	Start Fre 3.000000000 GH
6 4 primipris 6 4	in a start	9999-10-10-10-10-10-10-10-10-10-10-10-10-10-	8.30 <u>,000,000,000,000,000</u> ,000,000,000,000,	-sighter - south	edenka meter tetunak tahun et	nagasiere del producto d'an diversi (agrica de al pe	Stop Fre 10.00000000 GH
art 3.00 Res BW	1.0 MHz	#vi	BW 1.0 MHz	FLAICTION	Sweep 1	Stop 10.000 GHz 1.67 ms (1001 pts)	CF Ste 700.000000 MH Auto Ma
1 N 1 2 3 4	f	3 805 GHz	-34,14 dBm	PORCHOR	PONCTON NOTA	FORCIENTIADE	Freq Offse 0 H
6 7 8 9							
0			-		STÁTUS	11	

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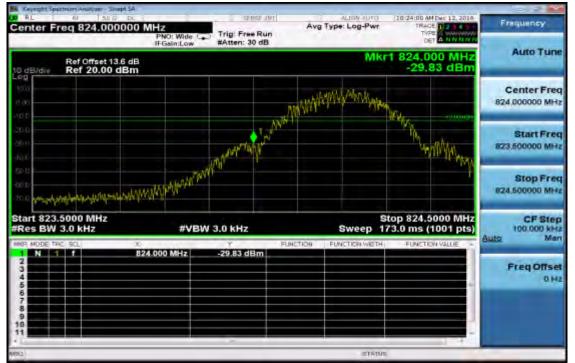
Center Freq 1.515000000 GHz Avg Type: Log-Pwr Frequency Trig: Free Run #Atten: 30 dB PNO: Fast Call Auto Tune Mkr3 2.546 4 GHz -34.43 dBm Ref Offset 13.6 dB Ref 33.60 dBm Center Freq 1.515000000 GHz Start Freq 30.000000 MHz 3 02 Stop Freq 3.00000000 GH Stop 3.000 GHz Sweep 3.600 ms (1001 pts) Start 30 MHz #Res BW 1.0 MHz CF Step 297,000000 MHz #VBW 1.0 MHz 31.58 dBm 37 14 dBm 34.43 dBm 1.697 6 GHz 2.646 4 GHz Freq Offset OH

Out of Band emission at antenna terminals - GPRS 850 Channel Highest

Keynight Spectrum Analyzer - Skrept S RL AL 50 G D	C. Lawrence C.	THE BREE	Avg Type: Log-Pwr	10:32:29 AM Dwc 12, 2016	Frequency
enter Freq 6.500000	PNO: Fast C	Trig: Free Run #Atten: 30 dB	WAG LADE: COG-LML	DET P NN NINN	
Ref Offset 13.6 d Ref 33.60 dBr				Mkr1 3.973 GHz -33.88 dBm	Auto Tuni
99 276 126					Center Fre 6 50000000 GH
5 4D 1 1				(3.00 d0n	Start Free 3.000000000 GH
96 4 Jacobier and Construction of the Construc	19449-1949-19-2-3	ي او پاده مند و ميدو مستحد را و مالاند د	and any design of the second	after fan en sen fan er slaat sterre	Stop Fre 10.000000000 GH
Res BW 1.0 MHz	#VBW	1.0 MHz	Sweep 1	Stop 10.000 GHz 1.67 ms (1001 pts) FUNCTION VALUE	CF Ste 700,000000 MH Auto Ma
1 N 1 1 2 3 4 6	3.973 GHz	-33.88 dBm		-	Freq Offse 0 H
0			státu		

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Band edge emission at antenna terminals – GPRS 850 Channel Lowest

Band edge emission at antenna terminals – GPRS 850 Channel Highest



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enter Freq 1.5150000	00 GHz	Trig: Free Run	Avg	Type: Log-Pwr	TRACE 1 2 31 00 20 AM Dwc 12, 2016 TRACE 1 2 3 4 5 TYPE IN MANUAL	Frequency
Ref Offset 14 dB	IFGain:Low	#Atten: 30 dB		Mkr	1 1,850 6 GHz 28.77 dBm	
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					-4110.asj	Start Fre 30.000000 Mi
0		نىچىيەتلەھلەيتەييەتلارسى	-	and the second	Mittadhar 1995 Marchanania marafa	Stop Fr 3.00000000 G
art 30 MHz Res BW 1.0 MHz R MODE TRC SCLI	#VBW	1.0 MHz	NCTION	Sweep 3.6	Stop 3.000 GHz 600 ms (1001 pts)	
	1.850 6 GHz	28.77 dBm	N/LICH	FUNCTION HID IN	PONCTON VALUE	Freq Offs 01
		1. C.		status	1.4	

Out of Band emission at antenna terminals – GPRS 1900 Channel Lowest

RL	eq 11.50000	X. Jacob and A.	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	(31:00:46 AMDec 12, 2036 TRACE 12:14 CT TYPE N commons OET P. N M MARK	Frequency
0 dB/div	Ref Offset 14 dB Ref 34.00 dB			M	kr1 19.184 GHz -30.80 dBm	Auto Tuni
24:0 14:0 4:00						Center Fre 11.500000000 GH
1000					atimas.	Start Free 3.000000000 GH
16.0 16.0 16.0			ىرىنىلىلىمىرىنىڭ دەرىمىيە ل ۇلىيەت ۋە	and a star and a star a star as the star	ana	Stop Fre 20 00000000 GH
tart 3.00 Res BW	1.0 MHz		V 1.0 MHz		Stop 20.000 GHz 8.33 ms (1001 pts)	CF Ste 1.70000000 GH Auto Ma
1 N 1 2 3 4 5	1	19.184 GHz	-30.80 dBm	INCTION FUNCTION WIETH	FUNCTION VALUE	Freq Offse 0 P
6 7 8 9 10						
(a)				STATUS		-

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RF 50 G 18	sa Sense JWr	ALIGN AUTO	[11:02:34 AM Dec 12, 2016	212	
er Freq 1.5150000		Avg Type: Log-Pwr		Frequency	
Ref Offset 14 dB		Mk	r1 1.880 3 GHz 28.57 dBm	Auto Tun	
		1		Center Fre 1.515000000 GF	
			-1100680	Start Fre 30,000000 Mi	
	الم الله الم		an an tha	Stop Fr 3.00000000 G	
30 MHz BW 1.0 MHz	#VBW 1.0 MHz	Sweep 3.	Stop 3.000 GHz 600 ms (1001 pts)	CF St 297,000000 M Auto M	
N 51 T	1.880 3 GHz 28.67 dBm		+		
	FL94CT			Auto Mar FreqOffse 0 H	

Out of Band emission at antenna terminals – GPRS 1900 Channel Mid

RL A/ Shight Spectrum Analyzer - Strept SA				100 M		
enter Freq 11.5000000	PNO: Fast Trig: Free Run #Gain: Low #Atten: 30 dB	Avg Type: Log-Pwr	11 03:10 44 Dec 12, 2016 TRACE 1 2 3 4 5 TYPE Discourses DET P N.N.N.N.N.	Frequency		
Ref Offset 14 dB Mkr1 19.252 GHz -31.23 dBm						
10 10 10				Center Fre 11.500000000 GH		
			A Little age	Start Free		
an Dagerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrangerrang D	ت من از کاروان و اور و و و و و و و و و و و و و و و و و	والمراجع والم	and the second second second	Stop Free		
art 3.000 GHz Res BW 1.0 MHz	#VBW 1.0 MHz	Sweep 28.	Stop 20.000 GHz 33 ms (1001 pts)	20.000000000 GH CF Ste 1.700000000 GH		
IR MODE TRC SCL X	Y FUN 19.252 GHz -31 23 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE ×	Auto Ma		
			+	Freq Offse 0 H		

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Out of Band emission at antenna terminals – GPRS 1900 Channel Highest

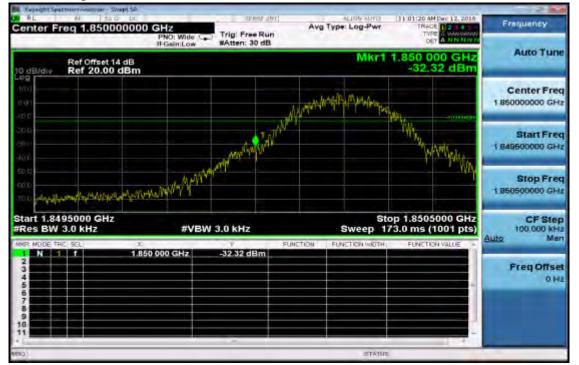
	11:07:48 AM Dec 12, 2016	ALIGN BUTG	_	SENSE JAT		Start Contract Start Start	Keynight Spectrolen Analy R1 87
Frequency	TRACE 1 2 14 14 TYPE NUMBER OF PARTY	Type: Log-Pwr	Avg	Trig: Free Run #Atten: 30 dB	NO: Fast	.515000000 G	enter Freq 1.5
Auto Tun	r1 1,910 0 GHz 28,61 dBm	MK		WILLER. OV UD	-Gain, Low	Offset 14 dB 34.00 dBm	
Center Fre 1.515000000 GH							eg 25.0 14.0
Start Fre 30,000000 MH	- 11 H day						- 00 - 00
Stop Fre 3.000000000 GH	a (frantisk som för att som för att som sör att som söre söra som söra som söra som söra som söra som söra som	an tan an a			تلور ورو و رو و رو	and a fair of the second s	
CF Ste 297,000000 MH Auto Ma	Stop 3.000 GHz 600 ms (1001 pts)	Sweep 3.	FUNCTION	1.0 MHz	#VBW	AHz ×	tart 30 MHz Res BW 1.0 MH
Freq Offse 0 H	-			28.61 dBm	0 GHz	1.91	N 1 T
		STATUS					0

enter Freg 11.500000	000 GHz PN0: Fast C IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	31:08:15 AM Dec 12, 2018 TRACE 1 2 3 4 9 1 TYPE N 00000000 OET P N N N 0 0	Frequency
Ref Offset 14 dB Ref 34.00 dBn	n		M	kr1 19.269 GHz -31.18 dBm	AutoTun
40 					Center Fre 11.500000000 GH
.00 .00 .00					Start Fre 3.00000000 GH
h.ll E.D 6.D	والمراسف المحينية والمراجع المحاسبة المحاص	alayay da a cala anang di sa	and the second	angen an Inne an	Stop Fre 20.00000000 GH
έ(Ω)					Contraction of the local distance
	#VB	W 1.0 MHz	Sweep 2	Stop 20.000 GHz 8.33 ms (1001 pts)	1.700000000 GH
tart 3.000 GHz Res BW 1.0 MHz R MOBE TRC SCL N 1 f	#VB) × 19.269 GHz		Sweep 2	Stop 20.000 GHz 8.33 ms (1001 pts) FUNCTION VALUE	CF Ste 1.700000000 GH Auto Ma
Res BW 1.0 MHz	x	Y F	the last has seen as a loss of the share of a statement of	8.33 ms (1001 pts)	1.700000000 GH
Res BW 1.0 MHz	x	Y F	the last has seen as a loss of the share of a statement of	8.33 ms (1001 pts)	1.700000000 GH Auto Ma Freq Offse

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Band edge emission at antenna terminals – GPRS 1900 Channel Lowest

Band edge emission at antenna terminals – GPRS 1900 Channel Highest



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	PNO: Fast	Trig: Free Run #Atten: 30 dB		DET P N N N N N	
dB/div Ref Offset 13.6 dB			Mk	r3 2.472 6 GHz -35.20 dBm	Auto Tuni
0 (6 (0	¥1				Center Free 1.515000000 GH
40				11.00.404	Start Fre 30.000000 MH
4 - 1 - 1 - 1		, causeline of a local			Stop Fre 3.000000000 GH
art 30 MHz Res BW 1.0 MHz R MODE TRC SOL X			Sweep 3.	Stop 3.000 GHz .600 ms (1001 pts) FUNCTION VALUE	CF Ste 297,000000 MH Auto Ma
	826.0 MHz 1.648 4 GHz 2.472 6 GHz	28.50 dBm -38.64 dBm -35.20 dBm			Freq Offse 0 H

Out of Band emission at antenna terminals – EDGE 850 Channel Lowest

	etnum Anulyzer - 3							
RL Center Fr			NO: Fast	Trig: Free R #Atten: 30 d	Av	g Type: Log-Pwr	10:42:34 AM Dec 12, 2016 TRACE 12, 2, 4, 5 TYPE MUSEUM DET P N N N H	Frequency
dB/div	Ref Offset	13.6 dB				N	Akr1 3.756 GHz -33.37 dBm	Auto Tun
99 176 130								Center Fre 6.50000000 GH
40 6 A	.1.						13.00 лол	Start Fre 3.000000000 GH
64 	apre a star and	989 00 94990000000000000000000000000000000		10775-0 ⁴⁴ 5		and have a set of the second se	ومحاصليه والاغتر والمسجوع والمراسية والمساحية	Stop Fre 10.000000000 GH
tart 3.00 Res BW	1.0 MHz	X	#VBW	1.0 MHz	FUNCTION	Sweep 1	Stop 10.000 GHz 1.67 ms (1001 pts	
1 N 1 2 3 4 5			6 GHz	-33.37 dBm				Freq Offse
6 7 8 9 0								
10							11	

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RL M Sacher Sterring Sterring Sterring Sterring Sterring Sterring Statements Sterring Sterrin	PNO: Fast G	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	10:54:57 AM Dec 12, 2016 TRACE 1 2 3 4 5 T TYPE DOMESSION DET P. N.N.144 M	Frequency
Ref Offset 13.6 dB Ref 33.60 dBm			Mĸ	r3 2.509 8 GHz -34.62 dBm	Auto Tune
99 216 116	¥1				Center Free 1.515000000 GH
s 4D (C. A				11.02.004	Start Free 30,000000 MH
26. 4 16. 4 26. 4			E El la ciencia de contra de la contra de El la contra de la c	ini continente a la francessia da seconda da	Stop Fre 3.000000000 GH
tart 30 MHz Res BW 1.0 MHz	#VB\	V 1.0 MHz	Sweep 3.	Stop 3.000 GHz 600 ms (1001 pts)	CF Ste 297.000000 MH Auto Ma
1 N 1 f 2 N 1 f 1 N 1 f 2 N 1	837.8 MHz .673 2 GHz .609 8 GHz	28.51 dBm -38.63 dBm -34.62 dBm			Freq Offse 0 H

Out of Band emission at antenna terminals – EDGE 850 Channel Mid

Reynight Space	NI SU G			SENSE JUT		ALION SUITO	10:55:09 AM Dwc 12, 201	
enter Fr	eq 6.50000	00000 GHz		rig: Free Run Atten: 30 dB	Avg T	ype: Log-Pwr	TYPE DUALD	Frequency
dB/div	Ref Offset 13 Ref 33.60 (.6 dB	H,LOW H			N	1kr1 3.777 GH -34.18 dBr	Auto Tuni
99 56 76								Center Fre 6 50000000 GH
80) 40) () A	.1						11.02.40	Start Free 3.000000000 GH
	- And and a second	an the second	n mayor Milling again me	المواجدة ورواح والمواجعة		n a an	يەر بىرى بەدرا يار بىرى بولەرك بېرى بە	Stop Fre 10.000000000 GH
art 3.000 Res BW 1 P MODE TRO	1.0 MHz	x	#VBW 1.0		NCTION 1	Sweep 1	Stop 10.000 GH 1.67 ms (1001 pts Function value	
1 N 1 2 3 4 5 6	*	3.777 (GHz -3	4.18 dBm				Freq Offse 0 H
7								
3						STATUS		

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Center Freq 1.515000000 GHz Avg Type: Log-Pwr Frequency Trig: Free Run #Atten: 30 dB PNO: Fast () Auto Tune Mkr3 2.546 4 GHz -34.19 dBm Ref Offset 13.6 dB Ref 33.60 dBm Center Freq 1.515000000 GHz Start Freq 30.000000 MHz 1 02 Stop Freq 3.00000000 GH Stop 3.000 GHz Sweep 3.600 ms (1001 pts) Start 30 MHz #Res BW 1.0 MHz CF Step 297,000000 MHz #VBW 1.0 MHz 28.67 dBm 37.40 dBm 34.19 dBm 1.697 6 GHz 2.646 4 GHz Freq Offset OH

Out of Band emission at antenna terminals – EDGE 850 Channel Highest

	beam Analyzer - Sile			1415			. S 2 7
	eq 6.50000			Avi	g Type: Log-Pwr	10:56:53 AM Dwc 12, 2016 TRACE 1 2 3 4 3 TVPE PLOADANANA OFT PLAN NO	Frequency
dB/div	Ref Offset 13 Ref 33.60 d	.6 dB	#AUEN. 30 U	2	N	4kr1 9.335 GHz -34.22 dBm	
76 76							Center Fre 6 50000000 GH
40 40 4						(1.02.604	Start Fre 3.000000000 GH
4	****	موسودي والمراجع و	لارو و د اجر می استان می و د	warne wards of	ring-interpolitic production of the	ana biya dala nging ya <mark>banyi na padada na</mark>	Stop Fre 10.000000000 GH
art 3.000 Res BW 1	1.0 MHz	# V I	BW 1.0 MHz	FUNCTION	Sweep 1	Stop 10.000 GHz 1.67 ms (1001 pts)	
1 N 1 2 3 4 5 6		9.335 GHz	-34.22 dBm				Freq Offse 0 H
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9							
a)					STATUS		

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Band edge emission at antenna terminals – EDGE 850 Channel Lowest

Band edge emission at antenna terminals – EDGE 850 Channel Highest



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RL AI Suice DC	SENSU :		ALIGN AUTO	02:20:24 PM Dec 12, 2016	Frequency
enter Freq 1.51500000	PNO: Fast C Trig: Free Ro IFGain:Low #Atten: 30 dl	in	Type: Log-Pwr	TYPE IN NINIT	
Ref Offset 14 dB			Mkr	1 1,850 6 GHz 27,83 dBm	Auto Tuni
		T			Center Fre 1.515000000 GH
				-11 (1) also	Start Fre 30,000000 MH
n D D	and the second		- Alexandra Participation	an a	Stop Fre 3.00000000 GH
art 30 MHz tes BW 1.0 MHz R MODE TRC SCL X	#VBW 1.0 MHz	FUNCTION	Sweep 3.6	Stop 3.000 GHz 500 ms (1001 pts)	CF Ste 297.000000 Mi Auto Mi
N 1 7 1	.850 6 GHz 27.83 dBm				Freq Offse
	<i></i>		STATUS	11	

Out of Band emission at antenna terminals – EDGE 1900 Channel Lowest

RL 00 enter Freq 11	500000000	SHZ NO: Fast G	Trig: Free Run #Atten: 30 dB		NLIGH AUTO	62-20:38 PM Dec 12, 2016 TRACE 1 2 3 4 5 Type Northeast DET P Northeast	And the second se
D dB/div Ref 3	fset 14 dB 4.00 dBm				M	-31.03 dBm	AutoTune
99 940 140							Center Free 11.500000000 GH
.00 00						at interest	Start Free
5.0 mag		-	-	-	وبليا ومعروبا المروسي المتروم		Stop Fre
é.b							20 00000000 GH
tart 3.000 GHz Res BW 1.0 MH	Iz	#VBW	/ 1.0 MHz		Sweep 2	Stop 20.000 GHz 3.33 ms (1001 pts)	CF Ste 1.70000000 GH Auto Ma
R MODE TRO SOL	× 18.90	53 GHz	-31.03 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE +	Batto ma
						_	Freq Offse
6 7 8 9							
1			-				
1					STATUS		

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		and the second se	13 M M
PNO: Fast C Trig: Free Run	Avg Type: Log-Pwr	TRACE 12345	Frequency
IFGain:Low #Atten: 30 dB	Mk	UST	Auto Tuni
	1		Center Fre 1.515000000 GH
		-1109-050	Start Fre 30,000000 MH
ال الم المحمد المحم المحمد المحمد	an a	alay sheet and a second and a second	Stop Fre 3.00000000 GH
#VBW 1.0 MHz	Sweep 3		CF Ste 297,000000 Mi Auto M
1.880 3 GHz 27.29 dBm		-	Freq Offs 01
	U GHZ PNO: Fest Trig: Free Run #Atten: 30 dB	PNO: Fast Trig: Free Run HEGain:Low #Atten: 30 dB MK #VBW 1.0 MHz Sweep 3	0 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr TYPE: Distance Mkr1 1,880 3 GHz 27,29 dBm Mkr1 1,880 3 GHz 27,29 dBm 1 <

Out of Band emission at antenna terminals – EDGE 1900 Channel Mid

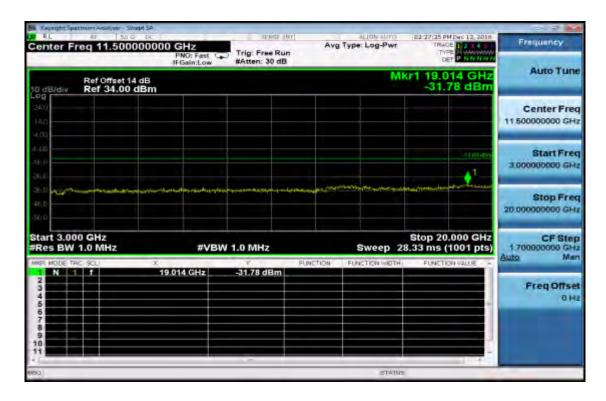
Reynight Spec	Anima Animativan - Skrap		and the second	_	ALIGN AUTO	an de la suite de la suite	
11.34	eq 11.50000		Trig: Free Run #Atten: 30 dB	Avg	Type: Log-Pwr	02-24:32 PM Dec 12, 2016 TRACE 1 2 3 4 3 TYPE PLOTONOM DET P NN NNT	Frequency
dB/div	Ref Offset 14 c Ref 34.00 dl				M	-30,48 dBm	Auto Tuni
40 40							Center Fre 11,50000000 GH
.00 .00 (1)						41100.050	Start Fre 3.00000000 GH
6.0 6.0			مور دو رو در المراجع ا	anting - Anton	with a distance of the last of the	en medastra en anteriora de compaño	Stop Fre 20 00000000 GH
tart 3.000 Res BW	1.0 MHz	#VE	3W 1.0 MHz	FLUCTION	Sweep 2	Stop 20.000 GHz 3.33 ms (1001 pts)	CF Ste 1.700000000 GH Auto Ma
	f	18.895 GHz	-30.48 dBm	PORCHOS	PORCTION WE IN	FUNCTION VALUE	Freq Offse
6							
9							

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Out of Band emission at antenna terminals – EDGE 1900 Channel Highest

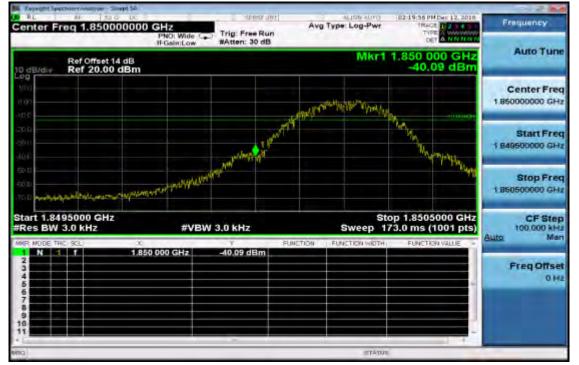
RL RL 1.51500000	D GHz	Sense Jun	Avg Type: Log-Pwr	02-27:15 PM Dwc 12, 2016 TR4CE	Frequency
Ref Offset 14 dB		#Atten: 30 dB	M	kr1 1,910 0 GHz 27.51 dBm	Auto Tuni
-99 24 () 14 () 4 (15)					Center Fre 1.515000000 GH
10.00 E CD 10.00				4100.050	Start Fre 30,000000 MH
25 D	and a street the state of	amaning a share.		and an	Stop Fre 3.000000000 GH
Start 30 MHz Res BW 1.0 MHz	#VBW 1		Sweep	Stop 3.000 GHz 3.600 ms (1001 pts)	CF Ste 297,000000 MH Auto Ma
1 N 1 f	1.910 0 GHz	27.51 dBm		PORCHARTING A	Freq Offse 0 H
6 7 8 9 10					
53 C			STÁD	15	



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Band edge emission at antenna terminals – EDGE 1900 Channel Lowest

Band edge emission at antenna terminals – EDGE 1900 Channel Highest



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Ruyanghit Spectrolms Analyzer - Skrapt SA RL RF 50.02 Dc	THE BARE	ALION AUTO [11:28:05 AM Dec 12, 201	
Center Freq 1.51500000		Avg Type: Log-Pwr TRACE 1234 Type: Der Paret	Frequency
Ref Offset 14 dB Ref 30.00 dBm		Mkr1 1,853 6 GH 22,49 dBr	Z Auto Tun
200 10.0			Center Free 1.515000000 GH
270 100 200			Start Free 30,000000 MH
40.0	turungi ganagaan kang dina ayaa sa kana da 4	and a second sec	Stop Fre 3.000000000 GH
Start 30 MHz #Res BW 1.0 MHz	#VBW 1.0 MHz	Stop 3.000 GH Sweep 3.600 ms (1001 pts	
2 3 4 5	1.853 6 GHz 22.49 dBm	ANCTION FUNCTION WOTH: FUNCTION VALUE	Freq Offse 0 H
6 7 8 9 9 10			
· [STATUS	-

Out of Band emission at antenna terminals – HSDPA II Channel Lowest

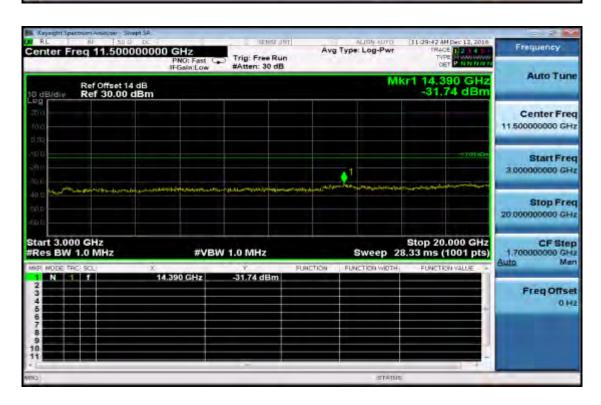
RL		0 DC 0000000 GHz PNO: Fast IFGain;Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	(31:28:10 AM/Dec 12, 2016 TRACE 12, 2, 3, 4 TYPE NORMALING OUT PINNING	Frequency
0 dB/div	Ref Offset			M	kr1 19.269 GHz -29,72 dBm	Auto Tuni
2014 10.0						Center Fre 11.500000000 GH
00 00				Here and a second and the second	1303@	Start Fre 3.000000000 GH
40 U 50 D	الروالين من المهدي					Stop Fre 20 00000000 GH
tart 3.00 Res BW	1.0 MHz	#V	BW 1.0 MHz	Sweep 2	Stop 20.000 GHz 8.33 ms (1001 pts)	CF Ste 1.70000000 GH Auto Ma
1 N 1 2 3 4 5		19.269 GHz	-29.72 dBm			Freq Offse 0 P
6 7 8 9 10						
10				STATUS		

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Frequency	[11:29:31 AM Dec 12, 2016 TRACE 12, 2016 TVPE 14 encements DET P. N.N. N. N. N.	ALION AUTO Type: Log-Pwr	Avg	SENSE JV Trig: Free Run #Atten: 30 dB	D GHz PNO: Fast	reg 1.51500000	
AutoTun	Ref Offset 14 dB Mkr1 1,880 3 GHz 22.11 dBm 22.11 dBm						
Center Free 1.515000000 GH							
Start Free 30,000000 MH	110360						
Stop Fre 3.000000000 GH	and the second	ىرىنىدە بەر بەربىدىن <u>بىدار</u> يەنى	مبسا آ دوسمدسم		the the property of the second se		
CF Step 297,000000 MH Auto Ma	Stop 3.000 GHz 500 ms (1001 pts)	Sweep 3.	FLUCTION	1.0 MHz	#VBW	MHz 1.0 MHz	
Freq Offse 0 H	-			22.11 dBm	1.880 3 GHz		
		STATUS					

Out of Band emission at antenna terminals – HSDPA II Channel Mid

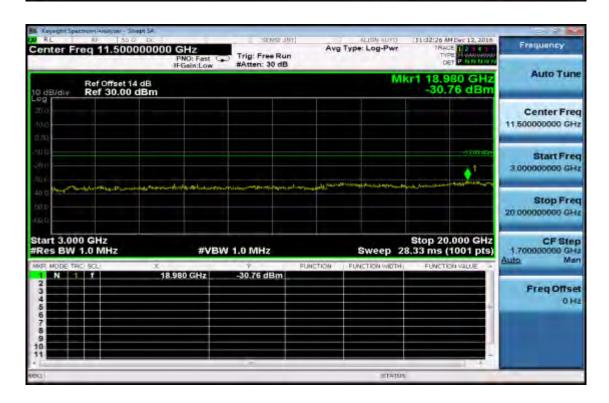


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RL N/ Sh G DC	SENSE JUT	ALIGN ADITO	31:32:07 AM Dec 12, 2016	Party line and
enter Freq 1.515000000 GHz PNO: F IFGaint	ow Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TYPE PLONGAUGHT	Frequency
Ref Offset 14 dB	r1 1.907 0 GHz 22.24 dBm	Auto Tuni		
20 00 00				Center Free 1.515000000 GH
00 00 00			ലത്ത	Start Free 30,000000 MH
0.0 	الجدرة الباديد فالباهنة مساهنتهم فأوريدونوه	and have growing and	an a shin a birni ya na kasan yan k	Stop Fre 3.000000000 GH
IP, MODE TRC, SCL X		Sweep 3.	Stop 3.000 GHz 600 ms (1001 pts) FUNCTION VALUE	CF Ster 297.000000 MH Auto Ma
1 N 1 f 1.907 0 GH	z 22.24 dBm		+	Freq Offse 0 H
9				

Out of Band emission at antenna terminals – HSDPA II Channel Highest



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Band edge emission at antenna terminals – HSDPA II Channel Lowest

Band edge emission at antenna terminals – HSDPA II Channel Highest



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RL N M DC DC enter Freq 1.51500000	0 GHz PNO: Fast C	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	0152:29 PM Dec 12, 2016 TRADE 12, 2, 4 TYPE Providence OET P. N.N.N.M.N.	Frequency Auto Tune
dB/div Ref 30.00 dBm			MK	r3 2.479 2 GHz -36.34 dBm	
	Q1				Center Fred 1.515000000 GH
		- 62		-100mbr	Start Free 30.000000 MH
D	uit bezannia and	en e	and and a set of the s		Stop Free 3.000000000 GH
art 30 MHz tes BW 1.0 MHz		1.0 MHz	Sweep 3.	CF Step 297.000000 MH Auto Mar	
N 1 T N 1 T N 1 T	828.9 MHz 1.652 8 GHz 2.479 2 GHz	22.20 dBm -36.81 dBm -36.34 dBm	ICTION : FUNCTION WIBTH:	FUNCTION VALUE .	Freq Offse 0 H
		-	erátus	11	

Out of Band emission at antenna terminals – HSUPA V Channel Lowest

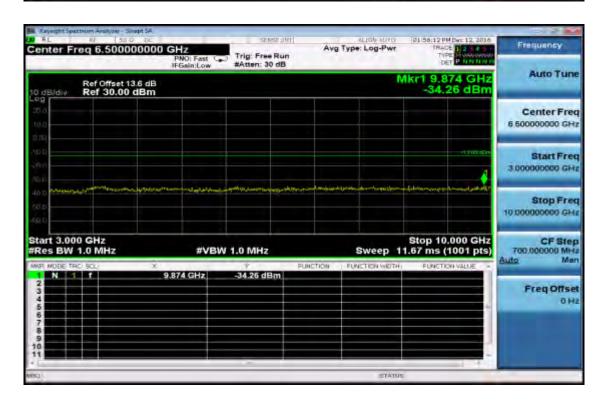
Conter Freq 6.50000000	D GHz PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB	Âve	ALIGN ADTO	0152:42 PM Dec 12, 2010 TRACE T 2 44 TVPE NUMBER OF	Frequency	
Ref Offset 13.6 dB Ref 30.00 dBm				N	1kr1 8.012 GHz -34.30 dBm	Auto Tune	
20.0 10.0 2.75						Center Fred 6 500000000 GH	
100				↓ ¹	-10160	Start Free 3.000000000 GH	
40 0 2000	ann fran Ara a Sanna an Sanna	felt friend and the and the second	No. 1 al ann	An Trans of the Particle Stranger		Stop Fre 10:00000000 GH	
Start 3.000 GHz #Res BW 1.0 MHz	#VBV	/ 1.0 MHz			Stop 10.000 GHz 1.67 ms (1001 pts		
WR MODE TRC: SCL X	8.012 GHz	-34.30 dBm	FUNCTION	FUNCTION WEITH	FUNCTION VALUE	Freq Offse 0 H	
6 7 8 9 10							
C.C.				STATUS			

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Frequency	E 2 3 4 5 P N N N N N	TRAC	Type: Log-Pwr		rig: Free Ru Atten: 30 dB	Z O: Fast Ca	PM	reg 1.5150	enter F
Auto Tun	8 GHz 58 dBm	3 2.50	MK					Ref Offset 1 Ref 30.00	0 dB/div
Center Free 1.515000000 GH							Q1		10.0
Start Fre 30.000000 MH		▲3		¢ ²					10 0 (0 0 (0 1)
Stop Fre 3.000000000 GH			an a			يا (Andre) و مارون و	enviral la		10 0 57 0
CF Ste 297.000000 MH Auto Ma	t 30 MHz Stop 3.000 GHz s BW 1.0 MHz #VBW 1.0 MHz Sweep 3.600 ms (1001 pts)						Res BW		
Freq Offse 0 H	+				22.56 dBm 38.43 dBm 35.58 dBm	MHz GHz GHz	834.9 1.673 2.509 1		1 N N N 4 5 6
									7 8 9 10
	- 14	_	STÁTUS		-				(a)

Out of Band emission at antenna terminals – HSUPA V Channel Mid



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enter Freq 1.515000000	GHZ PNO: Fast	Trig: Free Ru #Atten: 30 dl	in /	Avg Type: Log-Pw	f TRAD	Dec 12, 2018	Frequency
Ref Offset 13.6 dB	In Gain, LOW	HILLING CONTRACTOR		M	Kr3 2.539 -35.3	8 GHz 34 dBm	Auto Tune
Pg 0.0	01						Center Free 1.515000000 GH
000 000 000			02		3	1100 aDre	Start Fre 30,000000 MH
0 D <mark>ale al agricologica de la consecuencia de la c</mark>	1 house and the second	Alerty of the Alerty	nda Iona orde	nen printer i del pine de en	adiria ang ang ang ang ang ang ang ang ang an	a de la construcción de	Stop Fre 3.000000000 GH
tart 30 MHz Res BW 1.0 MHz RR MODE TRC SCL X		1.0 MHz	FLACTIO		3,600 ms (*	.000 GHz 1001 pts)	CF Ster 297.000000 MH Auto Ma
2 N 1 f 1.6	46.8 MHz 193.2 GHz 39.8 GHz	22.14 dBm -37.08 dBm -35.34 dBm					Freq Offse 0H
		0.0				- + 1	

Out of Band emission at antenna terminals – HSUPA V Channel Highest

RL		000000 GHz	sense avr	Avg Type: Log-Pwr	01:58:07 PMDec 12, 2010	Frequency
sincer Pr	eq 6.500	PNO: Fat IFGain:Lo		AND THE COUL OF	DET P NIN NIL	
dB/div	Ref Offset Ref 30.00			N	Akr1 3.749 GHz -34.33 dBm	Auto Tun
0.0 0.0						Center Fre 6 50000000 GH
50) 20) 20 20	1				-1100 aCm	Start Fre 3.00000000 GH
	and the same	taanga ahita tarar ta bagar ya	naderal and a stand and a s	hans ^a r hanna fran Maria fra Andra Barnad.	nii ⁹ dempisetiin ee Kessaa Agaaleje	Stop Fre 10:00000000 GH
art 3.00	1.0 MHz	#	VBW 1.0 MHz	Sweep 1	Stop 10.000 GHz 1.67 ms (1001 pts)	CF Ste 700.000000 Mit Auto Mit
1 N 1 2 3 4		3.749 GHz			FORCHORINGUE	Freq Offs
5						
			-			in the second





Band edge emission at antenna terminals – HSUPA V Channel Lowest

Band edge emission at antenna terminals – HSUPA V Channel Highest



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10. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

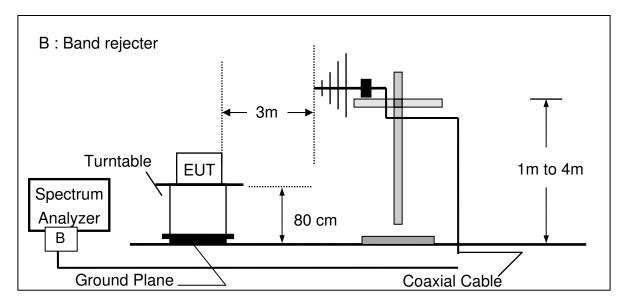
10.1. Standard Applicable

According to FCC §2.1053,

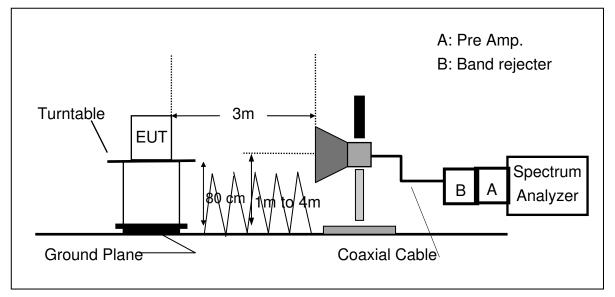
FCC §22.917(a), §24.238(a), the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm).

10.2. EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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10.3. Measurement Procedure:

The EUT was placed on a non-conductive; the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequencies (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

ERP (dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

EIRP (dBm) = SG Level(dBm) + Antenna Gain(dBi) + Cable Loss(dB)

- "F" : denotes Fundamental Frequency. ; "H" : denotes Harmonic Frequency. Note :
 - "E" : denotes Band Edge Frequency. ; "S" : denotes Spurious Frequency.

"---": denotes Noise Floor.

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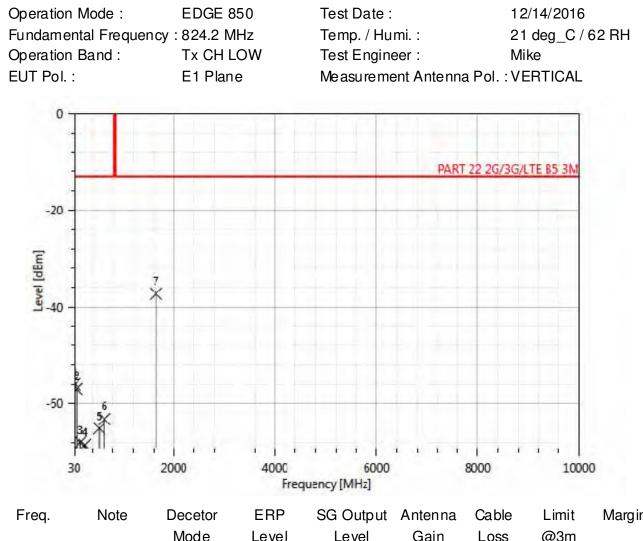
10.4. Measurement Equipment Used:

	· ·	SGS FAC-I			
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	R&S	FSV-30	101398	10/05/2016	10/04/2017
Bi-log Antenna	SCHWAZBECK	VULB9160	9160-3158	10/28/2016	10/27/2017
Bi-log Antenna	SCHWAZBECK	VULB9168	300	12/16/2015	12/15/2016
Horn antenna	ETS.LINDGREN	3117	143279	11/14/2016	11/13/2017
Horn antenna	ETS.LINDGREN	3117	123991	12/12/2016	12/11/2017
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017
Horn Antenna	Schwarzbeck	BBHA9170	185	07/18/2016	07/17/2017
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M1	01/02/2016	01/01/2017
Pre-Amplifier	HP	8447F	3113A06892	01/02/2016	01/01/2017
Pre-Amplifier	HP	8449B	3008A01973	01/02/2016	01/01/2017
Network Analyze	Anritsu	MS4644A	1216312	05/26/2016	05/25/2017
Signal Generator	Agilent	E4438C	MY45093613	07/07/2016	07/06/2017
Low Loss Cable	Huber Suhner	SUCOFLEX 104EPA	1166TX	01/02/2016	01/01/2017
Low Loss Cable	Huber Suhner	SUCOFLEX 104EPA	1166RX	01/02/2016	01/01/2017
Attenuator	Mini-Circuit	BW-S10W2+	3	01/02/2016	01/01/2017
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Site Cal	SGS	1166 chamber	N/A	01/02/2016	01/01/2017
Filter 800-1000	Micro-Tronics	EWT	M1	01/02/2016	01/01/2017
Filter 1800-2000	Micro-Tronics	EWT	M1	01/02/2016	01/01/2017
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	01/02/2016	01/01/2017
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	01/02/2016	01/01/2017
Radio Communica- tion Analyer	Anritsu	MT8820C	6201465317	12/10/2016	12/09/2017



10.5. Measurement Result:

Radiated Spurious Emission Measurement Result: EDGE 850 Mode



⊢req.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin	
		Mode	Level	Level	Gain	Loss	@3m		
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB	
41.64	S	Peak	-55.98	-42.14	-12.83	-1.00	-13.00	-42.98	
84.32	S	Peak	-56.93	-53.97	-1.78	-1.18	-13.00	-43.93	
156.10	S	Peak	-68.00	-64.73	-1.81	-1.46	-13.00	-55.00	
246.31	S	Peak	-68.53	-70.16	3.38	-1.75	-13.00	-55.53	
522.76	S	Peak	-65.12	-66.44	3.73	-2.42	-13.00	-52.12	
628.49	S	Peak	-63.20	-63.91	3.18	-2.47	-13.00	-50.20	
1648.00	Н	Peak	-37.27	-40.16	7.11	-4.22	-13.00	-24.27	



Operation Fundame Operation EUT Pol.	ntal Frequer Band :	EDGE 8 ncy : 824.2 M Tx CH L E1 Pland	Hz OW	Test Date : Temp. / Hu Test Engine Measureme	eer:	2 ⁻ M	2/14/2016 1 deg_C / (ike ORIZONT/	
0 -					PART	22 26/36/	LTE 85 3M	
-20 -			-					
Level [d8m] -40		×						
-50 -								
3	30	2000	4000 Free	6000 quency [MHz]		8000	1000	D
Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
85.29	S	Peak	-64.05	-61.32	-1.54	-1.19	-13.00	-51.05
102.75	S	Peak	-67.76	-64.63	-1.87	-1.26	-13.00	-54.76
167.74	S	Peak	-72.10	-69.51	-1.07	-1.51	-13.00	-59.10
401.51	S	Peak	-69.28	-70.71	3.82	-2.39	-13.00	-56.28
643.04	S	Peak	-66.61	-67.34	3.15	-2.43	-13.00	-53.61
697.36	S	Peak	-65.14	-65.29	3.08	-2.93	-13.00	-52.14
1010 00				00 70		1 00	40.00	

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Peak

1648.00

Н

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-38.73

7.11

-4.22

-13.00

-22.85



616.85

742.95

1675.00

S

S

Н

Operation Fundamen Operation EUT Pol. :	ntal Frequer Band :	EDGE 8 ncy : 836.6 M Tx CH M E1 Plane	Hz 11D	Test Date : Temp. / Hu Test Engine Measureme	eer:	2 ⁻ M	2/14/2016 I deg_C / 6 ike ERTICAL	62 RH
0 - - - -20 -					PART	22 26/36/	LTE 85 3M	
Level [dBm] -40 -		ž						
-50 -	×							
3	1986. 1. 10	2000	4000 Frequ	6000 uency [MHz]	i i i i	8000	10000	D
Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
39.70	S	Peak	-56.98	-42.88	-13.11	-0.99	-13.00	-43.98
83.35	S	Peak	-57.14	-53.94	-2.01	-1.18	-13.00	-44.14
154.16	S	Peak	-69.82	-66.46	-1.90	-1.45	-13.00	-56.82
236.61	S	Peak	-69.75	-71.24	3.23	-1.73	-13.00	-56.75

-63.35

-62.07

-39.51

Peak

Peak

Peak

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-63.98

-62.12

-42.42

3.21

3.17

7.20

-2.58

-3.12

-4.29

-13.00

-13.00

-13.00

-50.35

-49.07

-26.51



Report No.: ER/2016/B0100 Page: 81 of 117

Operation Fundame Operation EUT Pol.	ental Frequer 1 Band :	EDGE 8 icy : 836.6 Mi Tx CH M E1 Plane	Hz IID	Test Date : Temp. / Hu Test Engine Measureme	eer:	2 M	2/14/2016 1 deg_C / (ike ORIZONT/	
0 · -20 ·					PART	22 2G/3G	<u>'LTE 85 3M</u>	
[mgp] pa-40		×						
50		2000	4000	6000	1 1 1 1	8000	1000	
	50	2000		ency [MHz]		0000	1000	J
Freq.	Note	Decetor	ERP	SG Output		Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
85.29	S	Peak	-63.89	-61.16	-1.54	-1.19	-13.00	-50.89
102.75	S	Peak	-67.59	-64.46	-1.87	-1.26	-13.00	-54.59

Peak

Peak

Peak

Peak

Peak

-71.16

-69.24

-66.25

-63.93

-35.06

S

S

S

S

Н

211.39

476.20

631.40

749.74

1675.00

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-72.98

-70.77

-66.96

-64.04

-37.97

3.50

3.76

3.18

3.18

7.20

-1.68

-2.23

-2.46

-3.08

-4.29

-13.00

-13.00

-13.00

-13.00

-13.00

-58.16

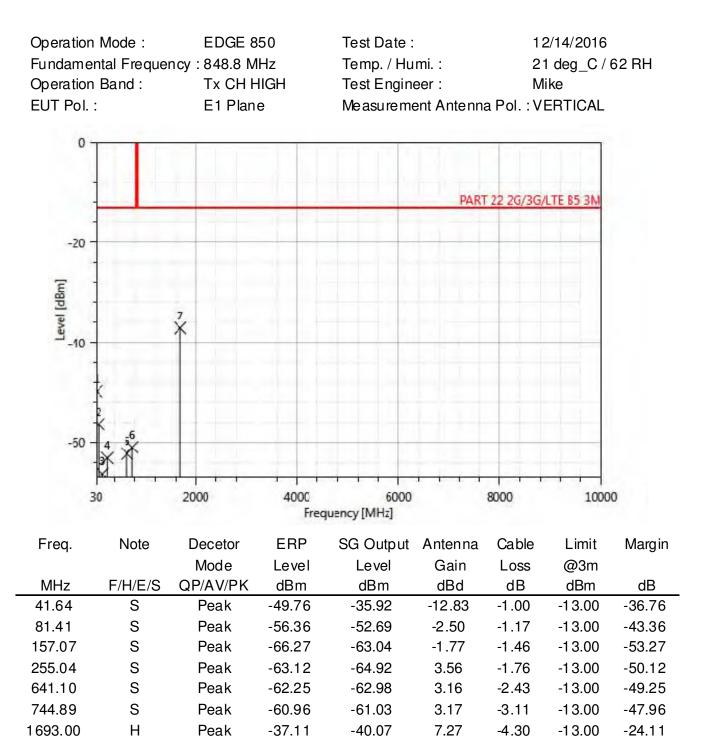
-56.24

-53.25

-50.93

-22.06





S Taiwan I td No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



Operation Fundame Operation EUT Pol.	ntal Freque Band :	EDGE 8 ncy : 848.8 M Tx CH H E1 Plane	Hz IGH	Test Date : Temp. / Hu Test Engine Measureme	eer:	21 M	2/14/2016 I deg_C / ike ORIZONT,	
0 -					PART	22 26/36/	LTE 85 3M	
-20		1						
[mgp] -40		7 *						
-50 -	2 4 3 5 X 4							
â	30	2000	4000 Freq	6000 Juency [MHz]	1 1 1 1	8000	1000	0
Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
MHz	F/H/E/S	Mode QP/AV/PK	Level dBm	Le vel dBm	Gain dBd	Loss dB	@3m dBm	dB
39.70	S	Peak	-57.29	-43.19	-13.11	-0.99	-13.00	-44.29
85.29	S	Peak	-57.61	-54.88	-1.54	-1.19	-13.00	-44.61
154.16	S	Peak	-67.69	-64.33	-1.90	-1.45	-13.00	-54.69
236.61	S	Peak	-62.00	-63.49	3.23	-1.73	-13.00	-49.00
451.95	S	Peak	-67.46	-68.92	3.65	-2.19	-1 3.00	-54.46

-65.69

-36.43

Peak

Peak

S

Н

679.90

1702.00

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-66.18

-39.41

-2.62

-4.31

-13.00

-13.00

3.10

7.30

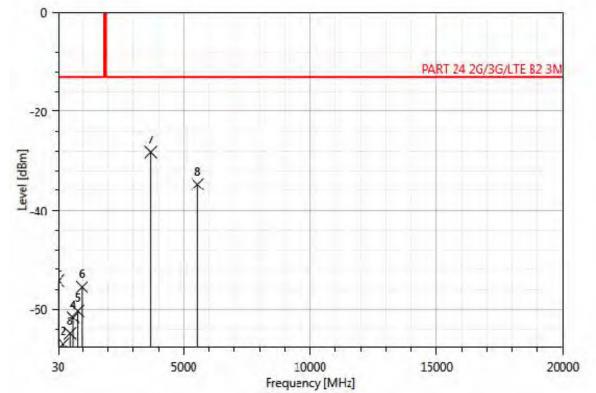
-52.69

-23.43



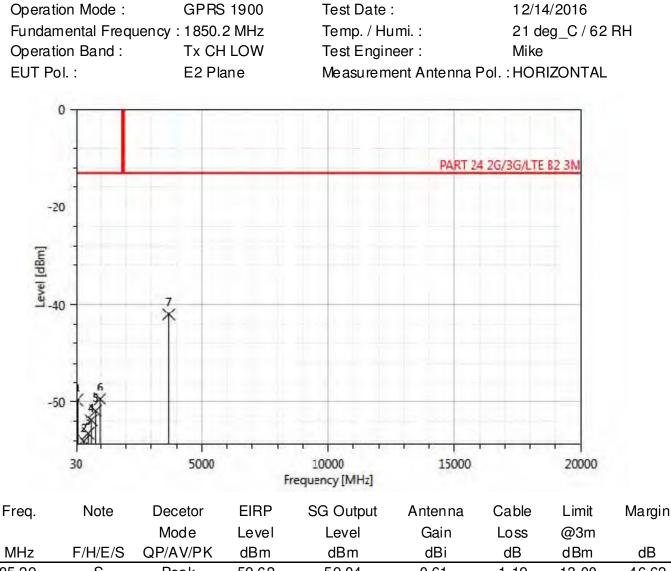
Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode :	GPRS 1900	Test Date :	12/14/2016
Fundamental Frequency	: 1850.2 MHz	Temp. / Humi. :	21 deg_C / 62 RH
Operation Band :	Tx CH LOW	Test Engineer :	Mike
EUT Pol. :	E2 Plane	Measurement Antenna Pol.	: VERTICAL



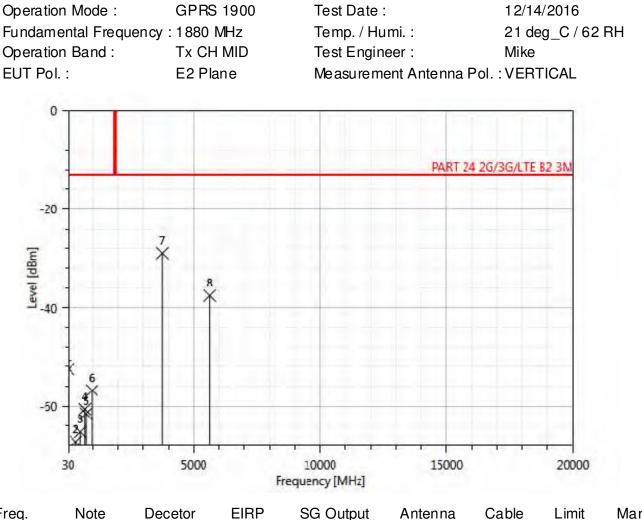
Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
39.70	S	Peak	-54.19	-42.24	-10.96	-0.99	-13.00	-41.19
236.61	S	Peak	-66.93	-70.58	5.38	-1.73	-13.00	-53.93
513.06	S	Peak	-64.81	-68.39	5.94	-2.35	-13.00	-51.81
624.61	S	Peak	-61.61	-64.44	5.34	-2.51	-13.00	-48.61
806.00	S	Peak	-60.27	-62.86	5.48	-2.89	-13.00	-47.27
972.84	S	Peak	-55.44	-57.92	5.65	-3.17	-13.00	-42.44
3700.40	Н	Peak	-28.19	-34.05	12.44	-6.58	-13.00	-15.19
5550.60	Н	Peak	-34.70	-39.36	12.90	-8.24	-13.00	-21.70





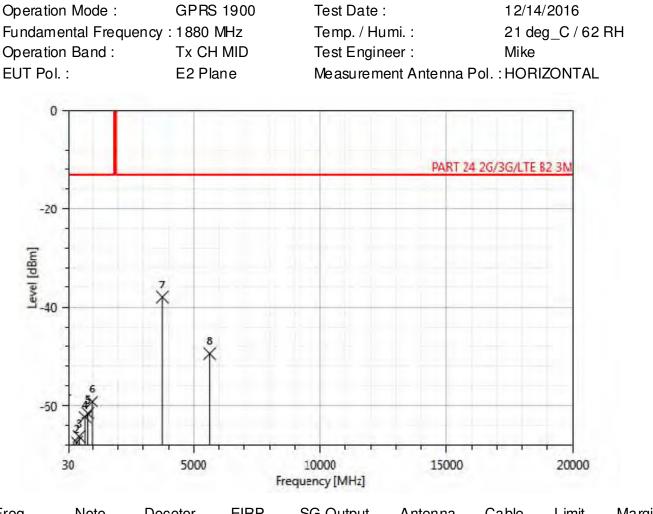
_	IVITZ	Г/П/Е/Э	QF/AV/PK	иыш	иыш	uЫ	uБ	UDIII	uБ	_
	85.29	S	Peak	-59.62	-59.04	0.61	-1.19	-13.00	-46.62	-
	343.31	S	Peak	-67.96	-71.94	5.98	-1.99	-13.00	-54.96	
	513.06	S	Peak	-66.41	-69.99	5.94	-2.35	-13.00	-53.41	
	633.34	S	Peak	-63.75	-66.62	5.32	-2.46	-13.00	-50.75	
	798.24	S	Peak	-61.77	-64.36	5.49	-2.90	-13.00	-48.77	
	972.84	S	Peak	-59.40	-61.89	5.65	-3.17	-13.00	-46.40	
	3700.40	Н	Peak	-42.02	-47.88	12.44	-6.58	-13.00	-29.02	





Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
41.64	S	Peak	-52.49	-40.80	-10.68	-1.00	-13.00	-39.49
335.55	S	Peak	-67.23	-71.24	5.95	-1.93	-13.00	-54.23
515.97	S	Peak	-65.21	-68.76	5.92	-2.36	-13.00	-52.21
691.54	S	Peak	-60.60	-63.02	5.24	-2.83	-13.00	-47.60
740.04	S	Peak	-61.52	-63.70	5.31	-3.14	-13.00	-48.52
972.84	S	Peak	-56.81	-59.29	5.65	-3.17	-13.00	-43.81
3760.00	Н	Peak	-28.95	-34.80	12.45	-6.60	-13.00	-15.95
5640.00	Н	Peak	-37.58	-42.12	12.90	-8.36	-13.00	-24.58





Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
30.00	S	Peak	-59.84	-46.26	-12.63	-0.96	-13.00	-46.84
377.26	S	Peak	-67.35	-71.10	5.99	-2.24	-13.00	-54.35
473.29	S	Peak	-66.25	-69.92	5.90	-2.23	-13.00	-53.25
702.21	S	Peak	-62.36	-64.58	5.24	-3.02	-13.00	-49.36
806.00	S	Peak	-61.51	-64.10	5.48	-2.89	-13.00	-48.51
978.66	S	Peak	-59.23	-61.81	5.77	-3.19	-13.00	-46.23
3760.00	Н	Peak	-37.96	-43.81	12.45	-6.60	-13.00	-24.96
5640.00	Н	Peak	-49.43	-53.97	12.90	-8.36	-13.00	-36.43



Operation Mode : GPRS 1900 Test Date : 12/14/2016 Fundamental Frequency: 1909.8 MHz Temp. / Humi. : 21 deg_C / 62 RH **Operation Band :** Tx CH HIGH Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol. : VERTICAL 0 PART 24 2G/3G/LTE B2 3M -20 7 [mgp] Penel 8 -50 5000 10000 15000 30 20000 Frequency [MHz]

Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
37.76	S	Peak	-52.45	-40.30	-11.17	-0.98	-13.00	-39.45
313.24	S	Peak	-67.16	-71.07	5.84	-1.93	-13.00	-54.16
498.51	S	Peak	-64.68	-68.38	6.00	-2.30	-13.00	-51.68
696.39	S	Peak	-61.12	-63.45	5.24	-2.91	-13.00	-48.12
759.44	S	Peak	-60.54	-62.88	5.36	-3.02	-13.00	-47.54
977.69	S	Peak	-57.06	-59.63	5.75	-3.19	-13.00	-44.06
3819.60	Н	Peak	-26.02	-31.83	12.47	-6.65	-13.00	-13.02
5729.40	Н	Peak	-31.88	-36.39	12.90	-8.39	-13.00	-18.88



Operation Mode : GPRS 1900 Test Date : 12/14/2016 Fundamental Frequency: 1909.8 MHz Temp. / Humi. : 21 deg_C / 62 RH **Operation Band :** Tx CH HIGH Test Engineer : Mike EUT Pol. : E2 Plane Measurement Antenna Pol. : HORIZONTAL 0 PART 24 2G/3G/LTE 82 3M -20 7 Level [dBm] 8 -505000 30 10000 15000 20000 Frequency [MHz]

Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
85.29	S	Peak	-59.49	-58.91	0.61	-1.19	-13.00	-46.49
411.21	S	Peak	-67.33	-70.87	5.93	-2.39	-13.00	-54.33
442.25	S	Peak	-66.74	-70.37	5.82	-2.19	-13.00	-53.74
697.36	S	Peak	-63.35	-65.65	5.23	-2.93	-13.00	-50.35
744.89	S	Peak	-61.96	-64.17	5.32	-3.11	-13.00	-48.96
972.84	S	Peak	-57.79	-60.28	5.65	-3.17	-13.00	-44.79
3819.60	Н	Peak	-26.98	-32.79	12.47	-6.65	-13.00	-13.98
5729.40	Н	Peak	-34.20	-38.71	12.90	-8.39	-13.00	-21.20



Radiated Spurious Emission Measurement Result: HSDPA Band II Mode

Fundam	on Band :	HSDF uency : 1852. Tx CF E2 Pla	4 MHz I LOW	Test Date Temp. / Hu Test Engin Measurem	ımi. :	21 d Mike		RH
(- 1					
					PART 24	4 2G/3G/LTI	E 82 3M	
-20								
				++++			-	
Level [dBm]	-						-	
Phan-4	o -							
	-	×7		1111				
	K 6							
-50								
			i i i		r r r			
	30	5000		10000 Frequency [MHz]	15000		20000	
Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB
39.70	S	Peak	-54.52	-42.57	-10.96	-0.99	-13.00	-41.52
386.96	S	Peak	-67.94	-71.62	5.98	-2.30	-13.00	-54.94
471.35	S	Peak	-64.99	-68.66	5.89	-2.22	-13.00	-51.99
682.81	S	Peak	-60.53	-63.11	5.25	-2.67	-13.00	-47.53
744.89	S	Peak	-61.17	-63.38	5.32	-3.11	-13.00	-48.17
990.30	S	Peak	-56.62	-59.39	6.01	-3.24	-13.00	-43.62

-47.60

Peak

3704.80

Н

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-53.46

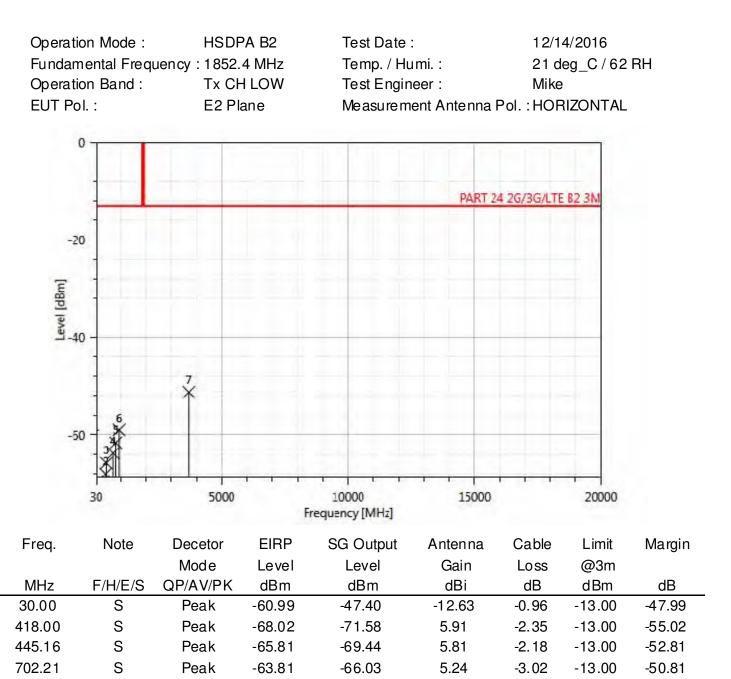
12.44

-6.58

-13.00

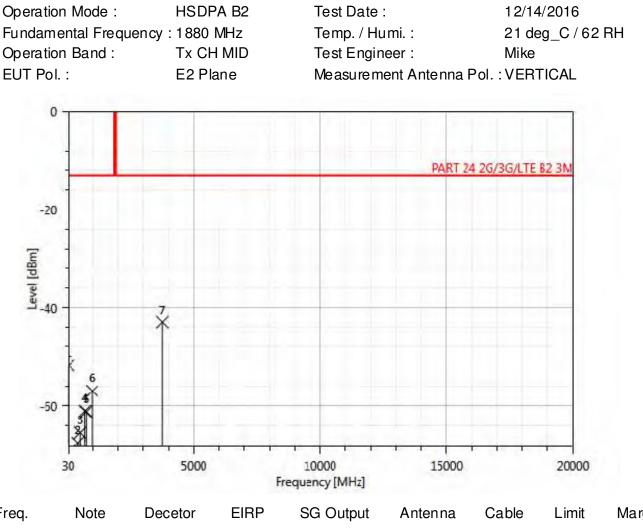
-34.60





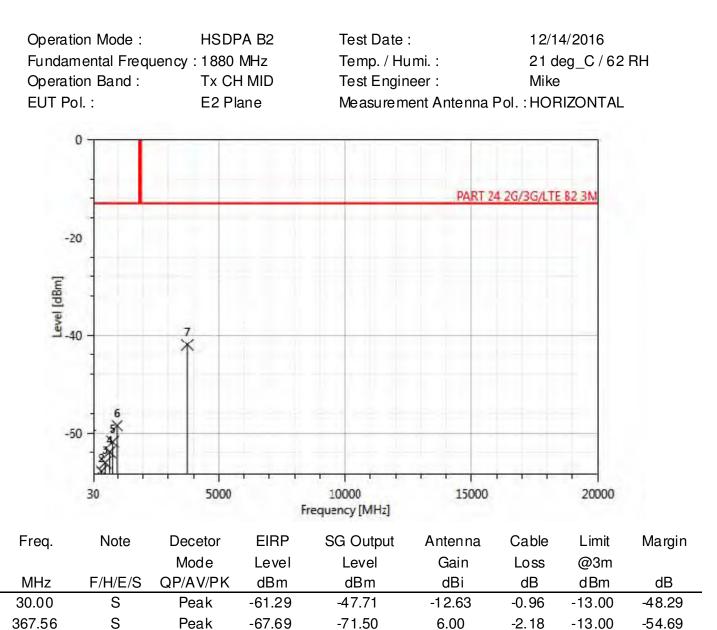
803.09	S	Peak	-61.66	-64.25	5.49	-2.90	-13.00	-48.66
934.04	S	Peak	-59.08	-61.11	5.26	-3.23	-13.00	-46.08
3704.80	Н	Peak	-51.25	-57.12	12.44	-6.58	-13.00	-38.25





Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin	
		Mode	Level	Level	Gain	Loss	@3m		
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB	
39.70	S	Peak	-51.78	-39.83	-10.96	-0.99	-13.00	-38.78	
416.06	S	Peak	-67.57	-71.13	5.91	-2.36	-13.00	-54.57	
515.00	S	Peak	-65.49	-69.06	5.92	-2.36	-13.00	-52.49	
689.60	S	Peak	-61.10	-63.55	5.24	-2.79	-13.00	-48.10	
752.65	S	Peak	-61.22	-63.50	5.34	-3.06	-13.00	-48.22	
980.60	S	Peak	-57.02	-59.63	5.81	-3.20	-13.00	-44.02	
3760.00	Н	Peak	-43.00	-48.86	12.45	-6.60	-13.00	-30.00	





-66.01

-63.89

-61.74

-58.51

-41.95

Peak

Peak

Peak

Peak

Peak

S

S

S

S

Н

515.00

687.66

798.24

972.84

3760.00

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-69.57

-66.38

-64.32

-60.99

-47.81

5.92

5.25

5.49

5.65

12.45

-2.36

-2.76

-2.90

-3.17

-6.60

-13.00

-13.00

-13.00

-13.00

-13.00

-53.01

-50.89

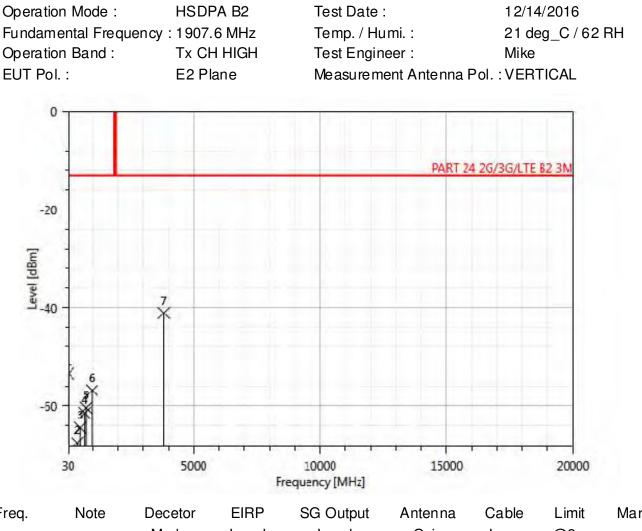
-48.74

-45.51

-28.95

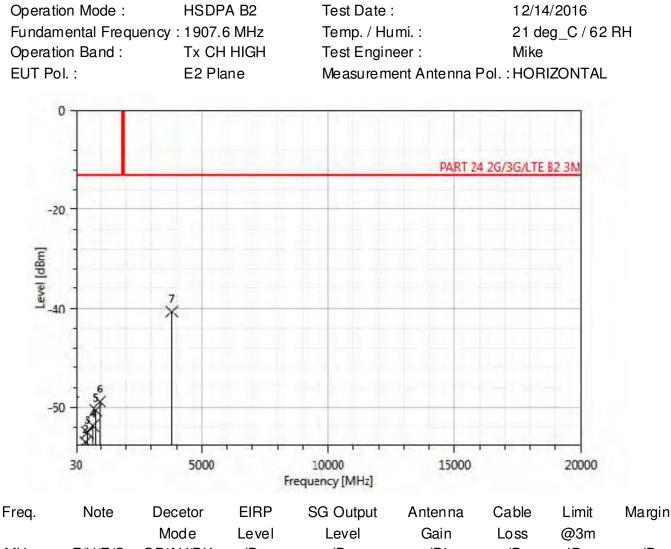
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	Freq.	Note	Decetor	EIRP	SG Output	Antenna	Cable	Limit	Margin	
			Mode	Level	Level	Gain	Loss	@3m		
_	MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB	
	41.64	S	Peak	-53.47	-41.79	-10.68	-1.00	-13.00	-40.47	
	400.54	S	Peak	-67.55	-71.14	5.97	-2.38	-13.00	-54.55	
	515.97	S	Peak	-64.50	-68.06	5.92	-2.36	-13.00	-51.50	
	686.69	S	Peak	-61.49	-64.00	5.25	-2.74	-13.00	-48.49	
	741.01	S	Peak	-60.44	-62.62	5.31	-3.13	-13.00	-47.44	
	975.75	S	Peak	-56.87	-59.40	5.71	-3.18	-13.00	-43.87	
	3815.20	Н	Peak	-41.09	-46.93	12.46	-6.63	-13.00	-28.09	





				•				5	
		Mode	Level	Level	Gain	Loss	@3m		
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBi	dB	dBm	dB	
30.00	S	Peak	-59.74	-46.16	-12.63	-0.96	-13.00	-46.74	_
406.36	S	Peak	-66.96	-70.49	5.95	-2.42	-13.00	-53.96	
482.99	S	Peak	-65.10	-68.80	5.94	-2.25	-13.00	-52.10	
692.51	S	Peak	-63.75	-66.15	5.24	-2.84	-13.00	-50.75	
801.15	S	Peak	-60.56	-63.16	5.49	-2.90	-13.00	-47.56	
967.99	S	Peak	-58.84	-61.24	5.56	-3.15	-13.00	-45.84	
3815.20	Н	Peak	-40.65	-46.48	12.46	-6.63	-13.00	-27.65	



Radiated Spurious Emission Measurement Result: HSUPA V Mode

Operation Mode :	HSUPA B5	Test Date :	12/14/2016
Fundamental Frequen	ncy : 824.2 MHz	Temp. / Humi. :	21 deg_C / 62 RH
Operation Band :	Tx CH LOW	Test Engineer :	Mike
EUT Pol. :	E1 Plane	Measurement Antenr	na Pol. : VERTICAL
0			
		PAF	T 22 2G/3G/LTE 85 3M
-20 -			
1			
[ugp] -40			
P .	-		
बें-40 -			
	7.		
	¥		
k			
-50 -			
- ×			
-34 ×			
30	2000 400		8000 10000
		Frequency [MHz]	
Freq. Note	Decetor ERF	SG Output Antenna	Cable Limit Margir

	Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin	
			Mode	Level	Level	Gain	Loss	@3m		
_	MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB	
_	36.79	S	Peak	-56.35	-41.94	-13.43	-0.98	-13.00	-43.35	
	78.50	S	Peak	-57.59	-53.14	-3.29	-1.15	-13.00	-44.59	
	159.98	S	Peak	-70.01	-66.90	-1.64	-1.48	-13.00	-57.01	
	250.19	S	Peak	-70.09	-71.78	3.44	-1.76	-13.00	-57.09	
	512.09	S	Peak	-66.64	-68.08	3.79	-2.35	-13.00	-53.64	
	619.76	S	Peak	-64.25	-64.90	3.20	-2.55	-13.00	-51.25	
	1652.80	Н	Peak	-48.23	-51.11	7.12	-4.24	-13.00	-35.23	



Operation Fundame Operation EUT Pol.	ental Freque n Band :	HSUPA ncy : 824.2 M Tx CH L E1 Pland	Hz OW	Test Date : Temp. / Hu Test Engine Measureme	mi. : eer :	2 ⁻ M	2/14/2016 1 deg_C / / ike ORIZONT,	
0	1				1-1			
		TIT.	+			1		
					PART	22 2G/3G/	LTE 85 3M	
-20	_							
Level [dBm]		i i i i	+++					
-40								
3		2						
		1	111					
]					1.0-1		
-50	6					_		
	k 4 X		-			T		
	30	2000	4000 Free	6000 quency [MHz]		8000	1000	0
Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
·		Mode	Level	Level	Gain	Loss	@3m	Ū
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
82.38	S	Peak	-67.24	-63.81	-2.26	-1.17	-13.00	-54.24
104.69	S	Peak	-69.26	-65.95	-2.04	-1.27	-13.00	-56.26
165.80	S	Peak	-72.11	-69.40	-1.21	-1.50	-13.00	-59.11
388.90	S	Peak	-70.22	-71.73	3.83	-2.31	-13.00	-57.22
623.64	S	Peak	-67.16	-67.84	3.19	-2.52	-13.00	-54.16
702.21	S	Peak	-65.52	-65.59	3.09	-3.02	-13.00	-52.52
1652.80	Н	Peak	-46.69	-49.58	7.12	-4.24	-13.00	-33.69



Operation Fundamer Operation EUT Pol. :	ntal Frequei Band :	HSUPA ncy : 836.6 M Tx CH M E1 Plane	Hz 11D	Test Date : Temp. / Hu Test Engine Measureme	eer:	2 ⁻ M	2/14/2016 1 deg_C / (ike ERTICAL	62 RH
0 - - -20					PART	22 26/36/	'LTE 85 3M	
Tevel [dBm]								
- - -50 -	56	×						
3	34 84 0	2000	4000 Free	6000 guency [MHz]		8000	1000	D
Freq.	Note	Decetor	ERP	•	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	d٦
MHz 47.46	F/H/E/S S	QP/AV/PK Peak	dBm -60.09	dBm -47.22	dBd -11.84	dB -1.03	dBm -1 3.00	dB -47.09
			-60.09 -59.10	-47.22 -54.09	-11.84 -3.87	-1.14	-13.00 -13.00	-47.09 -46.10
76.56 168.71	S S	Peak Peak	-59.10 -69.90	-54.09 -67.38	-3.87 -1.00	-1.14 -1.51	-13.00 -13.00	-46.10 -56.90
250.19	S	Peak	-70.11	-07.38	-1.00 3.44	-1.76	-13.00 -13.00	-50.90
626.55	S	Peak	-63.86	-64.56	3.44 3.19	-1.76	-13.00 -13.00	-57.11
750.71	S							
/50./1	3	Peak	-63.93	-64.04	3.18	-3.07	-13.00	-50.93

-52.73

Peak

1673.20

Н

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-55.64

7.20

-4.29

-13.00

-39.73



Operation Fundame Operation EUT Pol.	ntal Freque Band :	HSUPA ncy : 836.6 M Tx CH M E1 Pland	Hz 11D	Test Date : Temp. / Hu Test Engine Measureme	mi. : eer :	2 M	2/14/2016 1 deg_C / ike ORIZONT.	
0 -					PART	22 2G/3G/	<u>/LTE 85 3M</u>	
-20 ·								
Level [dBm] 46	-	Z						
-50 -	- 	1						
	16377 30	2000	4000	6000		8000	1000	0
	30	2000		quency [MHz]		0000	1000	0
Freq.	Note	Decetor	ERP	SG Output	Antenna	Cable	Limit	Margin
		Mode	Level	Level	Gain	Loss	@3m	
MHz	F/H/E/S	QP/AV/PK	dBm	dBm	dBd	dB	dBm	dB
81.41	S	Peak	-67.51	-63.85	-2.50	-1.17	-13.00	-54.51
106.63	S	Peak	-70.00	-66.52	-2.21	-1.27	-13.00	-57.00
338.46	S	Peak	-70.50	-72.36	3.81	-1.95	-13.00	-57.50
485.90	S	Peak	-69.59	-71.14	3.80	-2.26	-13.00	-56.59
638.19	S	Peak	-67.82	-68.54	3.16	-2.44	-13.00	-54.82
741.98	S	Peak	-64.72	-64.76	3.17	-3.13	-13.00	-51.72

-48.74

Peak

1673.20

Н

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-51.65

-13.00

-35.74

-4.29

7.20



628.49

751.68

1693.20

S

S

Н

PART 22 2G/3G/LTE 85 3M	
40	
k z	
-50 -56	
30 2000 400C 6000 8000 10000 Frequency [MHz]	
Freq. Note Decetor ERP SG Output Antenna Cable Limit Margir	ı
Mode Level Level Gain Loss @3m	
MHz F/H/E/S QP/AV/PK dBm dBm dBd dB dBm dB	
32.91 S Peak -50.18 -35.12 -14.09 -0.97 -13.00 -37.18	
76.56 S Peak -57.16 -52.15 -3.87 -1.14 -13.00 -44.16	
167.74 S Peak -65.71 -63.13 -1.07 -1.51 -13.00 -52.71	
251.16 S Peak -64.93 -66.64 3.47 -1.76 -13.00 -51.93	

-63.19

-62.86

-52.73

Peak

Peak

Peak

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-63.89

-62.98

-55.69

3.18

3.19

7.27

-2.47

-3.07

-4.30

-13.00

-13.00

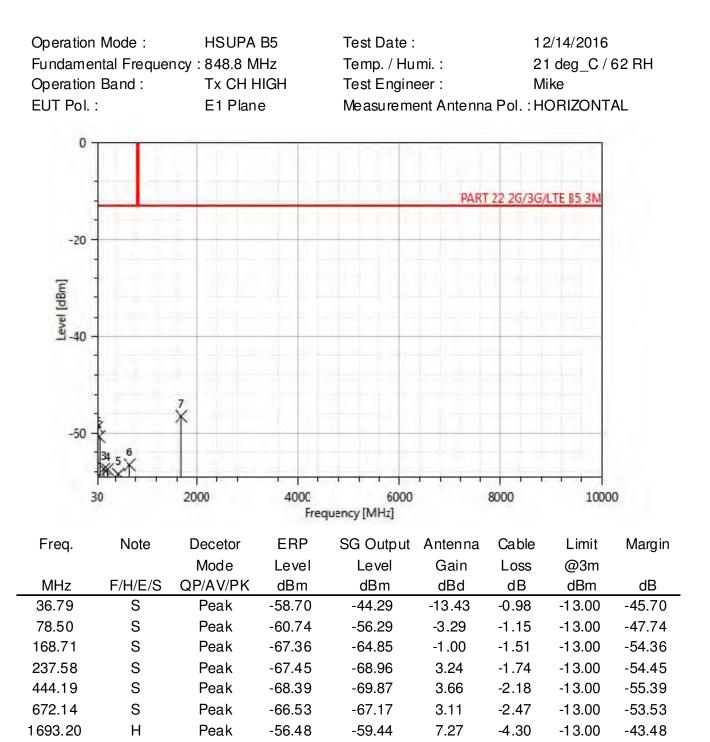
-13.00

-50.19

-49.86

-39.73





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11. FREQUENCY STABILITY MEASUREMENT

11.1. Standard Applicable:

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

11.2. Test Set-up:

Note: Measurement setup for testing on Antenna connector

11.3. Measurement Procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Set chamber temperature to 25

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11.4. Measurement Equipment Used:

SGS Conducted Room								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017			
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017			
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017			
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017			
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017			



11.5. Measurement Result:

FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz						
Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency				
Vdc	Temperature (Delta (Hz)	Limit (Hz)		



FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz						
Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency				
Vdc	Temperature (Delta (Hz)	Limit (Hz)		



FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: WCDMA II Mid Channel 1880 MHz						
Limit: +/- 2.5 ppm						
Power Supply	Environment	Frequency				
Vdc	Temperature (Delta (Hz)	Limit (Hz)		



FREQUENCY ERROR vs. VOLTAGE

Reference Frequency: WCDMA V Mid Channel 836.6 MHz							
	Limit: +/- 2.5 ppm						
Power Supply Environment Frequency							
Vdc	Temperature (Delta (Hz)	Limit (Hz)			

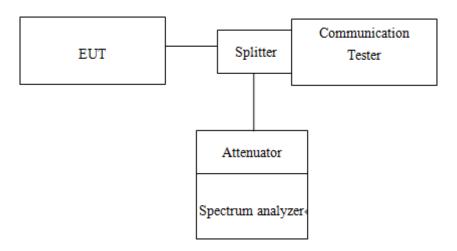


12. PEAK TO AVERAGE RATIO

12.1. Standard Applicable

The peak-to-average ration (PAR) of the transmission may not exceed 13dB.

12.2. Test SET-UP



12.3. Measurement Procedure

- 1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
- 2. Set resolution/measurement bandwidth \geq signal's occupied bandwidth; & internal =1ms
- 3. Set the number of counts to a value that stabilizes the measured CCDF curve.

SGS Conducted Room								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	02/26/2016	02/25/2017			
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2016	01/01/2017			
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/02/2016	01/01/2017			
Attenuator	Mini-Circuit	BW-S10W2+	2	01/02/2016	01/01/2017			
Splitter	Agilent	11636B	N/A	01/02/2016	01/01/2017			
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017			

12.4. Measurement Equipment Used

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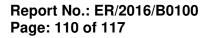


12.5. Measurement Result

Tabular Results:

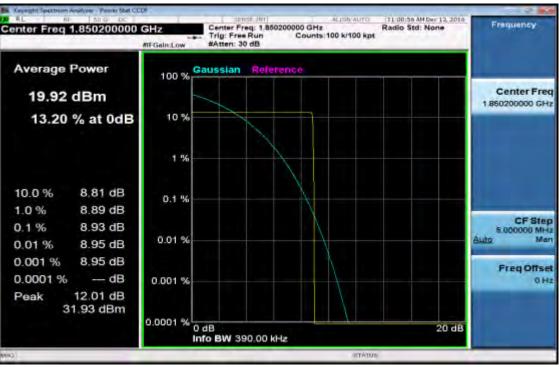
Frequency	СН		erage Ratio B)
(MHz)	CIT	GPRS	EDGE
1850.20	9296	8.93	11.42
1880.00	9400	9.98	11.13
1909.80	9538	10.7	11.33

Frequency	СН	Peak-to-Average Ratio (dB)		
(MHz)	СП	WCDMA Band II	HSDPA Band II	HSUPA Band II
1852.4	9262	2.73	4.02	3.41
1880.0	9400	2.67	3.48	3.56
1907.6	9538	2.66	3.75	3.54



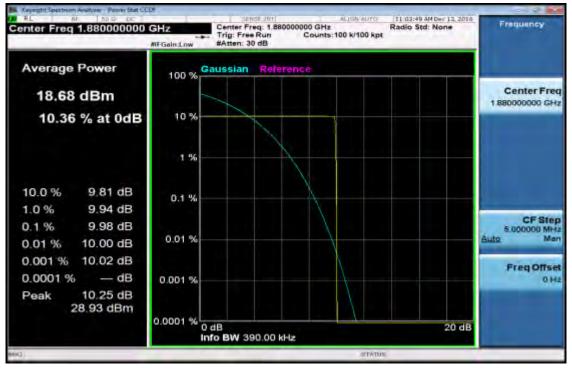


Measurement Results:



GPRS 1900 Channel Low

GPRS 1900 Channel Mid

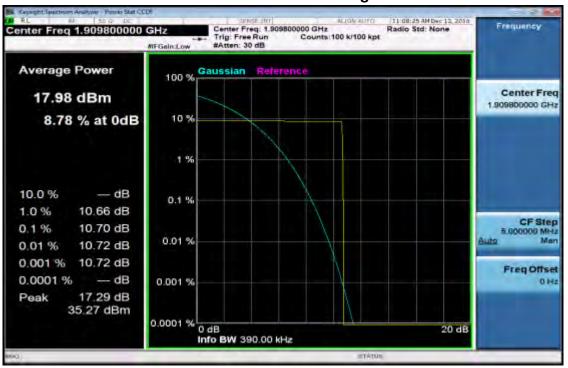


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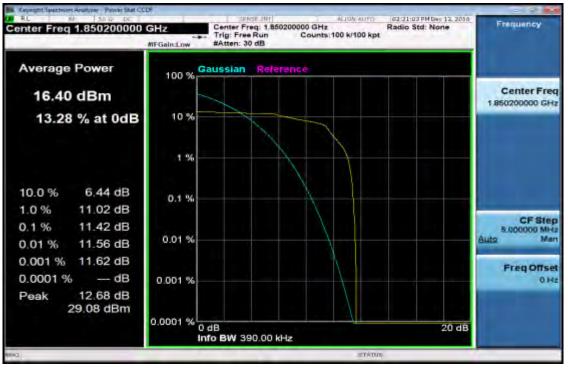
document is unlawful and offenders may be prosecuted to the fullest extent of the law.



GPRS 1900 Channel High



EDGE 1900 Channel Low



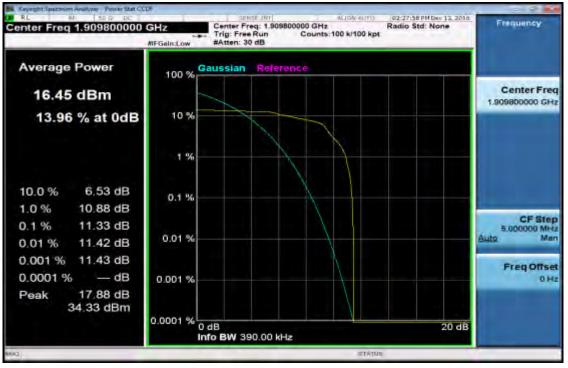
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EDGE 1900 Channel Mid



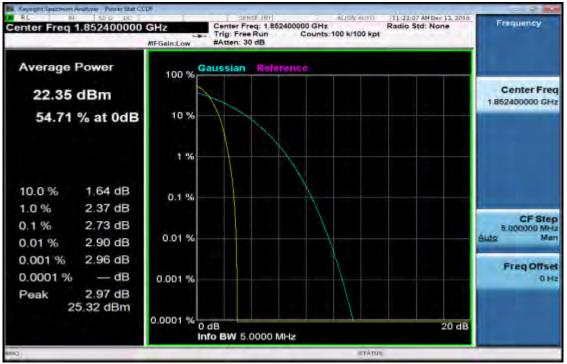
EDGE 1900 Channel High



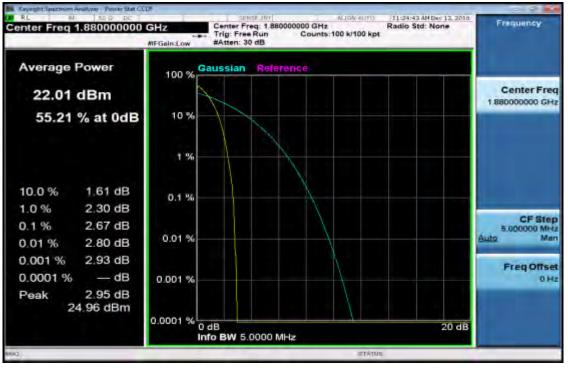
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WCDMA II Channel Low



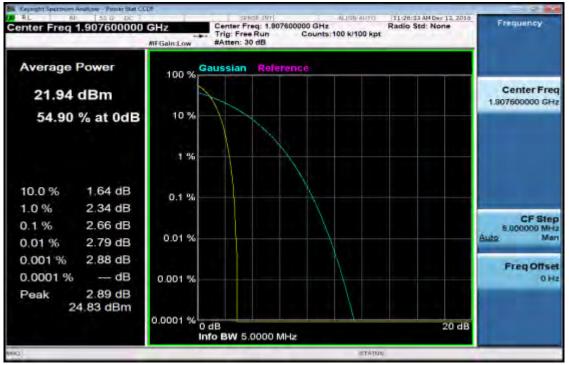
WCDMA II Channel Mid



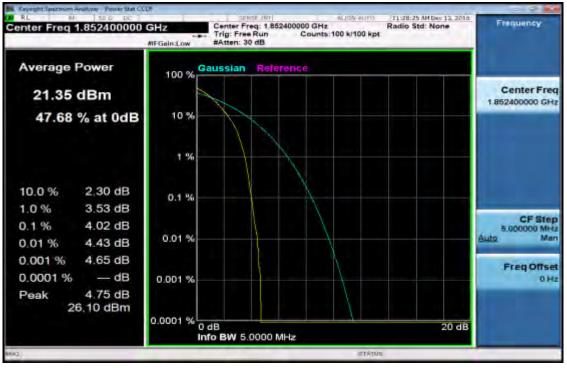
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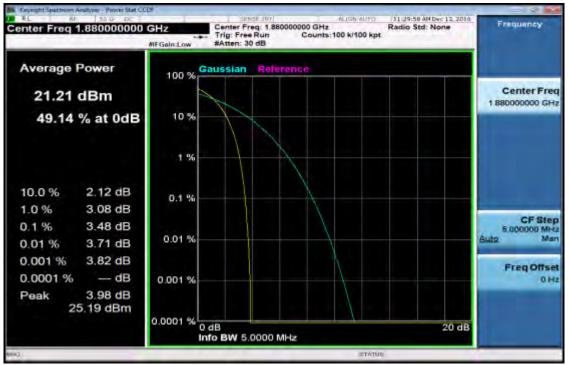
HSDPA II Channel Low



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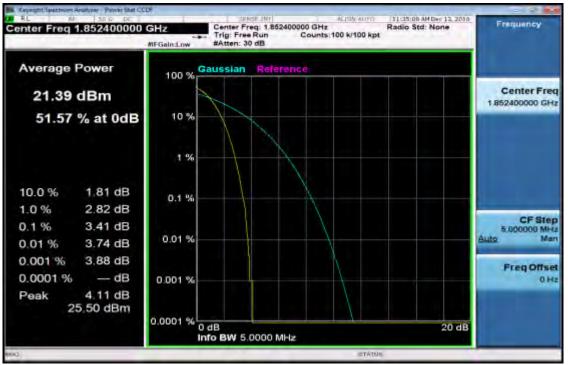
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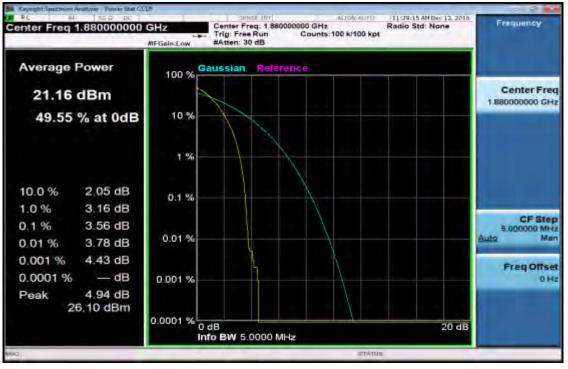
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~ End of Report ~