RF TEST REPORT

Report No.: 17071442-FCC-R1

Supersede Report No.: N/A

Applicant	MFOURTEL MEXICO S.A. DE C.V.
Product Name	Smart Phone
Model No.	M4 B2
Serial No.	N/A
Test Standard	FCC Part 22(H):2016 ;FCC Part 24(E):2016; ANSI/TIA-603-D: 2010
Test Date	December 22 to January 25, 2018
Issue Date	January 26, 2018
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Aaron Liang	David Huang	
Aaron Liang Test Engineer	David Huang Checked By	

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

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

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Laboratories Introduction

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Accreditations for Conformity Assessment

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

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CONTENTS

1. REPORT REVISION HISTORY 5

2. CUSTOMER INFORMATION 5

3. TEST SITE INFORMATION 5

4. EQUIPMENT UNDER TEST (EUT) INFORMATION 6

5. TEST SUMMARY 9

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS 10

6.1 RF EXPOSURE (SAR) 10

6.2 RF OUTPUT POWER 11

6.3 PEAK-AVERAGE RATIO 23

6.4 OCCUPIED BANDWIDTH 27

6.5 SPURIOUS EMISSIONS AT ANTENNA TERMINALS 38

6.6 SPURIOUS RADIATED EMISSIONS 51

6.7 BAND EDGE 57

6.8 FREQUENCY STABILITY 67

ANNEX A. TEST INSTRUMENT 71

ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS 73

ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT 85

ANNEX C.II. EUT OPERATING CONKITIONS 87

ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST 88

ANNEX E. DECLARATION OF SIMILARITY 89

1. Report Revision History

Report No.	Report Version	Description	Issue Date
17071442-FCC-R1	NONE	Original	January 26, 2018

2. Customer information

Applicant Name	MFOURTEL MEXICO S.A. DE C.V.
Applicant Add	Av. Ejército Nacional 436 Piso 3 Chapultepec Morales Miguel Hidalgo Distrito Federal 11570.
Manufacturer	CK Telecom Limited
Manufacturer Add	Technology Road.High-Tech Development Zone. Heyuan, Guangdong,P.R.China.

3. Test site information

Test Lab A:

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	535293
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

Test Lab B:

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China
FCC Test Site No.	694825
IC Test Site No.	4842B-1
Test Software	EZ_EMC(ver.Icp-03A1)

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.

4. Equipment under Test (EUT) Information

Description of EUT:	Smart Phone
Main Model:	M4 B2
Serial Model:	N/A
Date EUT received:	December 21, 2017
Test Date(s):	December 22 to January 25, 2018
Equipment Category：	PCE
Antenna Gain:	GSM850: -3dBi PCS1900: -1dBi UMTS-FDD Band V: -3dBi UMTS-FDD Band II: -1dBi LTE Band II: -1dBi LTE Band IV: -3dBi LTE Band VII: 0 dBi LTE Band XII: -4dBi Bluetooth/BLE: 1dBi WIFI: 1dBi GPS: -1dBi
Antenna Type:	PIFA antenna
Type of Modulation:	GSM / GPRS: GMSK EGPRS: GMSK,8PSK UMTS-FDD: QPSK LTE Band: QPSK, 16QAM 802.11b/g/n: DSSS, OFDM Bluetooth: GFSK, π /4DQPSK, 8DPSK BLE: GFSK GPS:BPSK
RF Operating Frequency (ies):	GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz

	UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz; RX: 1932.4 ~ 1987.6 MHz LTE Band II TX: 1850.7 ~ 1909.3MHz; RX : 1930.7 ~ 1989.3 MHz LTE Band IV TX: 1710.7 ~ 1754.3 MHz; RX : 2110.7~ 2154.3 MHz LTE Band VII TX: 2502.5 ~ 2567.5 MHz; RX : 2622.5 ~ 2687.5 MHz LTE Band XII TX:699.7 ~ 715.3 MHz; RX : 729.7~ 745.3MHz WIFI: 802.11b/g/n(20M): 2412-2462 MHz WIFI: 802.11n(40M): 2422-2452 MHz Bluetooth& BLE: 2402-2480 MHz GPS: 1575.42 MHz
Maximum Conducted AV Power to Antenna:	GSM Vioce:GSM850: 33.48dBm PCS1900: 30.23dBm GPRS:GSM850: 33.26dBm PCS1900: 20.27dBm EGPRS:GSM850: 33.23dBm PCS1900: 30.33dBm EGPRS(MSC5):GSM850: 27.09dBm PCS1900: 27.24dBm RMC:UMTS-FDD Band V: 23.22dBm UMTS-FDD Band II: 23.10dBm HSUPA:UMTS-FDD Band V: 22.58dBm UMTS-FDD Band II: 22.53dBm HSDPA:UMTS-FDD Band V: 22.55dBm UMTS-FDD Band II: 22.48dBm
ERP/EIRP:	GSM Vioce:GSM850: 28.18 ERP PCS1900: 29.80m / EIRP GPRS:GSM850: 27.78 ERP PCS1900: 29.58m / EIRP EGPRS(MCS5):GSM850: 21.43 ERP PCS1900: 26.42 EIRP RMC:UMTS-FDD Band V: 18.62m / ERP UMTS-FDD Band II: 22.11/ EIRP HSDPA:UMTS-FDD Band V: 18.12 ERP UMTS-FDD Band II: 21.32EIRP HSUPA:UMTS-FDD Band V: 18.23 ERP UMTS-FDD Band II: 20.99 EIRP

Number of Channels:	GSM 850: 124CH PCS1900: 299CH UMTS-FDD Band V: 102CH UMTS-FDD Band II: 277CH WIFI :802.11b/g/n(20M): 11CH WIFI :802.11n(40M): 7CH Bluetooth: 79CH BLE: 40CH GPS:1CH
Port:	USB Port, Earphone Port
Input Power:	Adapter: Model: M4 Input: AC100-240V~50/60Hz,150mA Output: DC 5V, 1000mA Battery: Model: M2400A Spec: 3.7V, 2400mAh, 8.88Wh
Trade Name :	M4
GPRS/ EGPRS Multi-slot class	8/10/11/12
FCC ID:	CLNM4B2

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

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

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

Measurement Uncertainty

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

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 RF Exposure (SAR)

Test Result: Pass

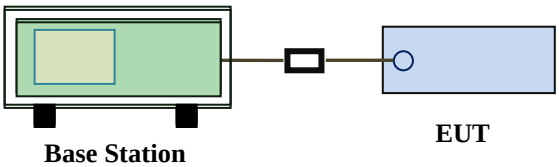
The EUT is a portable device, thus requires SAR evaluation;

Please refer to RF Exposure Evaluation Report: 17071442-FCC-H.

6.2 RF Output Power

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

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

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

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

Conducted Power

GSM Mode:

Burst Average Power (dBm);								
Band	GSM850				PCS1900			
Channel	128	190	251	Tune up Power tolerant	512	661	810	Tune up Power tolerant
Frequency (MHz)	824.2	836.6	848.8	/	1850.2	1880	1909.8	/
GSM Voice (1 uplink),GMSK	33.37	**33.48**	32.46	33±1	**30.23**	30.19	30.04	30±1
GPRS Multi-Slot Class 8 (1 uplink),GMSK	33.21	**33.26**	32.85	33±1	**30.27**	30.24	29.99	30±1
GPRS Multi-Slot Class 10 (2 uplink) GMSK	31.16	30.94	30.16	31±1	29.11	28.86	28.47	29±1
GPRS Multi-Slot Class 11 (3 uplink) GMSK	29.41	29.35	29.28	29±1	27.18	26.89	26.45	27±1
GPRS Multi-Slot Class 12 (4 uplink) GMSK	28.44	28.33	28.61	28±1	26.31	25.81	25.46	26±1
EGPRS Multi-Slot Class 8 (1 uplink) GMSK MCS1	**33.23**	33.08	32.9	33±1	**30.33**	30.19	29.91	30±1
EGPRS Multi-Slot Class 10 (2 uplink) GMSK MCS1	31.35	31.01	30.85	31±1	29.11	28.91	28.47	29±1
EGPRS Multi-Slot Class 11 (3 uplink) GMSK MCS1	29.59	29.44	29.25	29±1	27.2	26.86	26.44	27±1
EGPRS Multi-Slot Class 12 (4 uplink) GMSK MCS1	28.49	28.41	28.27	28±1	26.25	25.98	25.84	26±1
EGPRS Multi-Slot Class 8 (1 uplink) 8PSK MCS5	**27.09**	26.74	26.45	27±1	26.59	27.02	**27.24**	27±1

EGPRS Multi-Slot Class 10 (2 uplink) 8PSK MCS5	25.23	25.55	25.2	25±1	25.5	25.92	26.21	26±1
EGPRS Multi-Slot Class 11 (3 uplink) 8PSK MCS5	22.38	22.14	21.74	22±1	22.3	22.58	23.05	23±1
EGPRS Multi-Slot Class 12 (4 uplink) 8PSK MCS5	21.11	20.7	20.31	21±1	20.94	21.51	21.81	21±1

Remark :

GPRS, CS1 coding scheme.

EGPRS, MCS1 coding scheme.

EGPRS, MCS5 coding scheme.

Multi-Slot Class 8 , Support Max 4 downlink, 1 uplink , 5 working link

Multi-Slot Class 10 , Support Max 4 downlink, 2 uplink , 5 working link

Multi-Slot Class 12 , Support Max 4 downlink, 4 uplink , 5 working link

UMTS Mode:

UMTS-FDD Band V

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant
RMC 12.2kbps	4132	826.4	**23.22**	23±1
	4175	835	23.11	23±1
	4233	846.6	23.09	23±1
HSDPA Subtest1	4132	826.4	22.52	22±1
	4175	835	22.34	22±1
	4233	846.6	22.46	22±1
HSDPA Subtest2	4132	826.4	22.54	22±1
	4175	835	22.49	22±1
	4233	846.6	22.44	22±1
HSDPA Subtest3	4132	826.4	**22.55**	22±1
	4175	835	22.37	22±1
	4233	846.6	22.46	22±1
HSDPA Subtest4	4132	826.4	22.52	22±1
	4175	835	22.49	22±1
	4233	846.6	22.46	22±1
HSUPA Subtest1	4132	826.4	22.46	22±1
	4175	835	22.36	22±1
	4233	846.6	22.32	22±1
HSUPA Subtest2	4132	826.4	22.37	22±1
	4175	835	22.22	22±1
	4233	846.6	22.2	22±1
HSUPA Subtest3	4132	826.4	22.46	22±1
	4175	835	22.34	22±1
	4233	846.6	22.39	22±1
HSUPA Subtest4	4132	826.4	22.25	22±1
	4175	835	22.32	22±1
	4233	846.6	22.38	22±1
HSUPA Subtest5	4132	826.4	22.52	22±1
	4175	835	**22.58**	22±1
	4233	846.6	22.53	22±1

UMTS-FDD Band II

Band/ Time Slot configuration	Channel	Frequency	Average power (dBm)	Tune up Power tolerant
RMC 12.2kbps	9262	1852.4	23	23±1
	9400	1880	**23.1**	23±1
	9538	1907.6	23.01	23±1
HSDPA Subtest1	9262	1852.4	22.35	22±1
	9400	1880	22.41	22±1
	9538	1907.6	22.25	22±1
HSDPA Subtest2	9262	1852.4	22.31	22±1
	9400	1880	22.4	22±1
	9538	1907.6	22.4	22±1
HSDPA Subtest3	9262	1852.4	22.22	22±1
	9400	1880	22.39	22±1
	9538	1907.6	22.23	22±1
HSDPA Subtest4	9262	1852.4	22.36	22±1
	9400	1880	**22.48**	22±1
	9538	1907.6	22.29	22±1
HSUPA Subtest1	9262	1852.4	22.37	22±1
	9400	1880	22.39	22±1
	9538	1907.6	22.3	22±1
HSUPA Subtest2	9262	1852.4	22.15	22±1
	9400	1880	22.27	22±1
	9538	1907.6	22.32	22±1
HSUPA Subtest3	9262	1852.4	22.38	22±1
	9400	1880	22.44	22±1
	9538	1907.6	22.27	22±1
HSUPA Subtest4	9262	1852.4	22.12	22±1
	9400	1880	22.11	22±1
	9538	1907.6	22.22	22±1
HSUPA Subtest5	9262	1852.4	22.27	22±1
	9400	1880	**22.53**	22±1
	9538	1907.6	22.24	22±1

ERP & EIRP

GSM Voice

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	22.61	V	6.1	0.53	**28.18**	38.45
824.2	21.81	H	6.1	0.53	27.38	38.45
836.6	22.16	V	6.2	0.53	27.83	38.45
836.6	19.67	H	6.2	0.53	25.34	38.45
848.8	22.32	V	6.2	0.53	27.99	38.45
848.8	20.08	H	6.2	0.53	25.75	38.45

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	22.64	V	7.88	0.72	**29.8**	33
1850.2	20.48	H	7.88	0.72	27.64	33
1880	22.46	V	7.88	0.72	29.62	33
1880	20.8	H	7.88	0.72	27.96	33
1909.8	22.05	V	7.86	0.72	29.19	33
1909.8	20.5	H	7.86	0.72	27.64	33

GPRS:

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	22.21	V	6.1	0.53	**27.78**	38.45
824.2	20.71	H	6.1	0.53	26.28	38.45
836.6	21.95	V	6.2	0.53	27.62	38.45
836.6	20.85	H	6.2	0.53	26.52	38.45
848.8	21.64	V	6.2	0.53	27.31	38.45
848.8	20.93	H	6.2	0.53	26.6	38.45

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	21.52	V	7.88	0.72	28.68	33
1850.2	20.33	H	7.88	0.72	27.49	33
1880	22.42	V	7.88	0.72	**29.58**	33
1880	20.41	H	7.88	0.72	27.57	33
1909.8	21.23	V	7.86	0.72	28.37	33
1909.8	21.1	H	7.86	0.72	28.24	33

EGPRS (MCS5):

ERP for Cellular Band (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
824.2	15.86	V	6.1	0.53	**21.43**	38.45
824.2	14.46	H	6.1	0.53	20.03	38.45
836.6	15.52	V	6.2	0.53	21.19	38.45
836.6	15.09	H	6.2	0.53	20.76	38.45
848.8	15.13	V	6.2	0.53	20.8	38.45
848.8	14.98	H	6.2	0.53	20.65	38.45

EIRP for PCS Band (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1850.2	18.85	V	7.88	0.72	26.01	33
1850.2	16.2	H	7.88	0.72	23.36	33
1880	18.91	V	7.88	0.72	26.07	33
1880	17.59	H	7.88	0.72	24.75	33
1909.8	19.28	V	7.86	0.72	**26.42**	33
1909.8	17.16	H	7.86	0.72	24.3	33

RMC

ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	13.05	V	6.1	0.53	**18.62**	38.45
826.4	11.17	H	6.1	0.53	16.74	38.45
835	12.88	V	6.2	0.53	18.55	38.45
835	10.72	H	6.2	0.53	16.39	38.45
846.6	12.1	V	6.2	0.53	17.77	38.45
846.6	11.72	H	6.2	0.53	17.39	38.45

EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	14.95	V	7.88	0.72	**22.11**	33
1852.4	13.7	H	7.88	0.72	20.86	33
1880	14.77	V	7.88	0.72	21.93	33
1880	11.92	H	7.88	0.72	19.08	33
1907.6	14.4	V	7.86	0.72	21.54	33
1907.6	13.27	H	7.86	0.72	20.41	33

HSDPA

ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	12.44	V	6.1	0.53	18.01	38.45
826.4	9.4	H	6.1	0.53	14.97	38.45
835	11.13	V	6.2	0.53	16.8	38.45
835	10.26	H	6.2	0.53	15.93	38.45
846.6	12.45	V	6.2	0.53	**18.12**	38.45
846.6	10.68	H	6.2	0.53	16.35	38.45

EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	14.16	V	7.88	0.72	**21.32**	33
1852.4	12.38	H	7.88	0.72	19.54	33
1880	13.94	V	7.88	0.72	21.1	33
1880	12.07	H	7.88	0.72	19.23	33
1907.6	13.85	V	7.86	0.72	20.99	33
1907.6	12.31	H	7.86	0.72	19.45	33

HSUPA

ERP for UMTS-FDD Band V (Part 22H)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
826.4	12.66	V	6.1	0.53	**18.23**	38.45
826.4	11.56	H	6.1	0.53	17.13	38.45
835	12.38	V	6.2	0.53	18.05	38.45
835	10.86	H	6.2	0.53	16.53	38.45
846.6	11.81	V	6.2	0.53	17.48	38.45
846.6	10.47	H	6.2	0.53	16.14	38.45

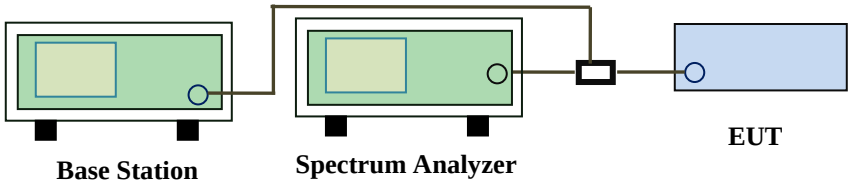
EIRP for UMTS-FDD Band II (Part 24E)

Frequency (MHz)	Substituted level (dBm)	Antenna Polarization	Antenna Gain correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)
1852.4	13.83	V	7.88	0.72	**20.99**	33
1852.4	11.2	H	7.88	0.72	18.36	33
1880	13.44	V	7.88	0.72	20.6	33
1880	12.08	H	7.88	0.72	19.24	33
1907.6	13.27	V	7.86	0.72	20.41	33
1907.6	11.51	H	7.86	0.72	18.65	33

6.3 Peak-Average Ratio

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

Spec	Item	Requirement	Applicable
§24.232(d)	a)	The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.	☑
Test Setup			
Test Procedure	According with KDB 971168 v02r02 5.7.2 Alternate procedure for PAPR 5.1.2 Peak power measurements with a peak power meter The total peak output power may be measured using a broadband peak RF power meter. The power meter must have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector. 5.2.3 Average power measurement with average power meter As an alternative to the use of a spectrum/signal analyzer or EMI receiver to perform a measurement of the total in-band average output power, a wideband RF average power meter with a thermocouple detector or equivalent can be used under certain conditions If the EUT can be configured to transmit continuously (i.e., the burst duty cycle ≥ 98%) and at all times the EUT is transmitting at is maximum output		

	power level, then a conventional wide-band RF power meter can be used. If the EUT cannot be configured to transmit continuously (i.e., the burst duty cycle < 98%), then there are two options for the use of an average power meter. First, a gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only over active transmission bursts at maximum output power levels. A conventional average power meter can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to 10log(1/duty cycle)
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

GSM : GSM 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	31.22	30.22	1
1880	31.26	30.16	1.1
1909.8	31.22	30.07	1.15

GPRS 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	31.25	30.27	0.98
1880	31.31	30.26	1.05
1909.8	31.11	29.99	1.12

EGPRS (MSC5) 1900 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1850.2	27.53	26.58	0.95
1880	28.11	27.02	1.09
1909.8	28.26	27.27	0.99

RMC : UMTS-FDD Band 2 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	23.64	23	0.64
1880	23.69	23.1	0.59
1907.6	23.59	23.01	0.58

HSDPA : UMTS-FDD Band 2 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	22.86	22.35	0.51
1880	22.96	22.41	0.55
1907.6	22.85	22.25	0.6

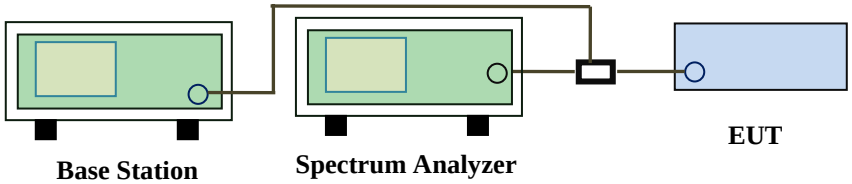
HSUPA ：UMTS-FDD Band 2 PK-AV POWER (PART 24E)

Frequency (MHz)	Conducted power(dBm)		Peak-Average Ratio(PAR)
	Peak	Average	
1852.4	22.88	22.37	0.51
1880	22.83	22.39	0.44
1907.6	22.91	22.3	0.61

6.4 Occupied Bandwidth

Temperature	25 °C
Relative Humidity	53%
Atmospheric Pressure	1010mbar
Test date :	January 12 & 15, 2017
Tested By :	Aaron Liang

Requirement(s):

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

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

GSM Voice:

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	242.87	319.4
190	836.6	245.69	311.6
251	848.8	245.79	313.2

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850	247.75	314.4
661	1880	244.00	318.3
810	1910	248.11	320.5

GPRS:

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	242.88	315.1
190	836.6	245.74	316.8
251	848.8	243.81	314.3

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850	246.34	314.5
661	1880	244.35	313.0
810	1910	245.83	316.8

EGPRS (MSC 5):

Cellular Band (Part 22H) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
128	824.2	246.53	315.9
190	836.6	246.18	312.7
251	848.8	244.06	311.3

PCS Band (Part 24E) result

Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Bandwidth (kHz)
512	1850	245.07	315.4
661	1880	244.27	318.8
810	1910	247.25	317.8

RMC:

UMTS-FDD Band V (Part 22H)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.6	4.1864	4.713
4175	835.0	4.1354	4.716
4233	846.4	4.1577	4.726

UMTS-FDD Band II (Part 24E)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1853	4.1369	4.698
9400	1880	4.1734	4.731
9538	1907	4.1568	4.734

HSDPA:

UMTS-FDD Band V (Part 22H)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.6	4.1499	4.706
4175	835.0	4.1530	4.727
4233	846.4	4.1474	4.736

UMTS-FDD Band II (Part 24E)

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1853	4.1676	4.721
9400	1880	4.1590	4.707
9538	1907	4.1774	4.712

HSUPA:

UMTS-FDD Band V (Part 22H)

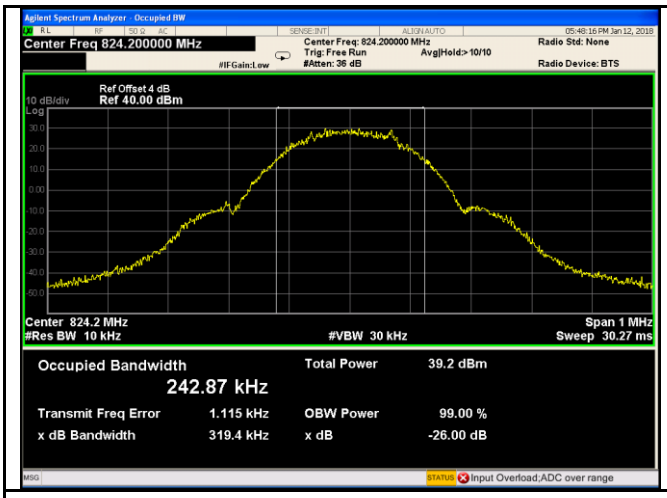
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.6	4.1428	4.712
4175	835.0	4.1681	4.727
4233	846.4	4.1546	4.727

UMTS-FDD Band II (Part 24E)

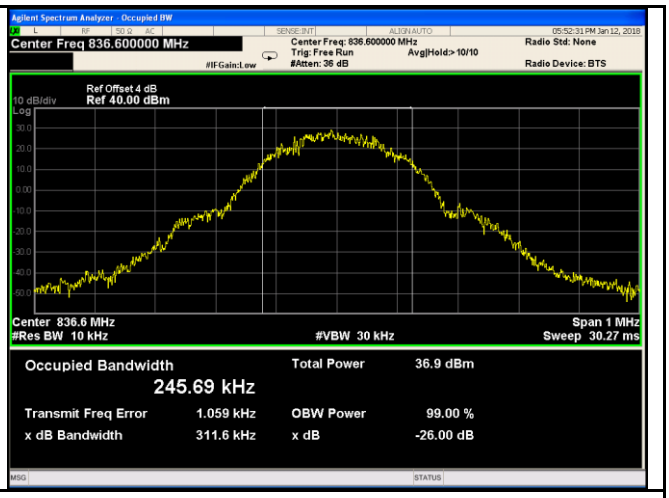
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
9262	1853	4.1688	4.727
9400	1880	4.1541	4.717
9538	1907	4.1665	4.732

Test Plots

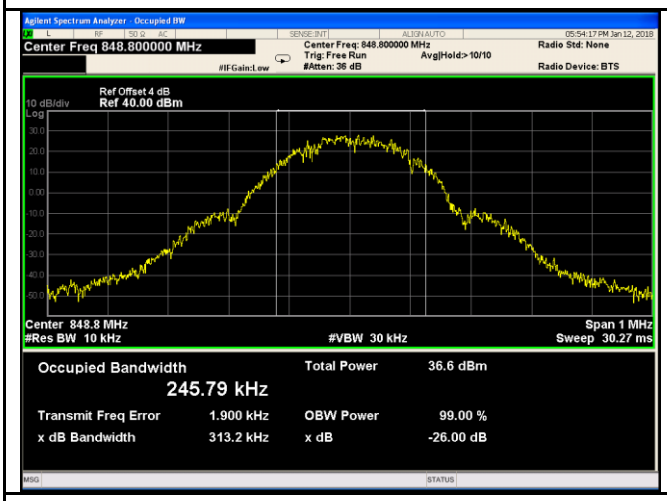
GSM Voice:



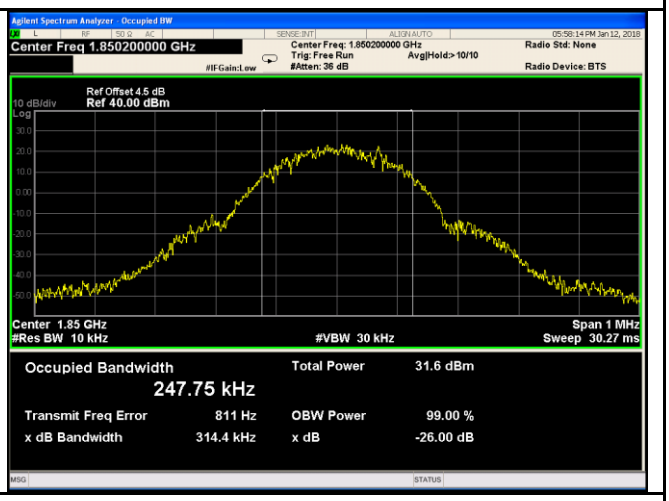
GSM 850 BW - Low CH 824.2MHz



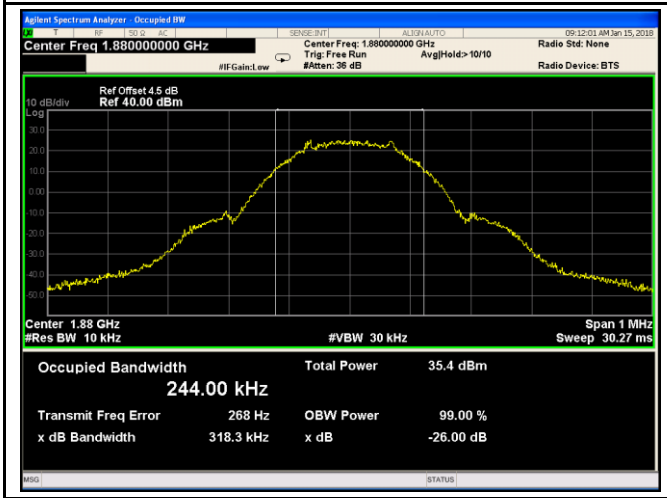
GSM 850 BW - Mid CH 836.6MHz



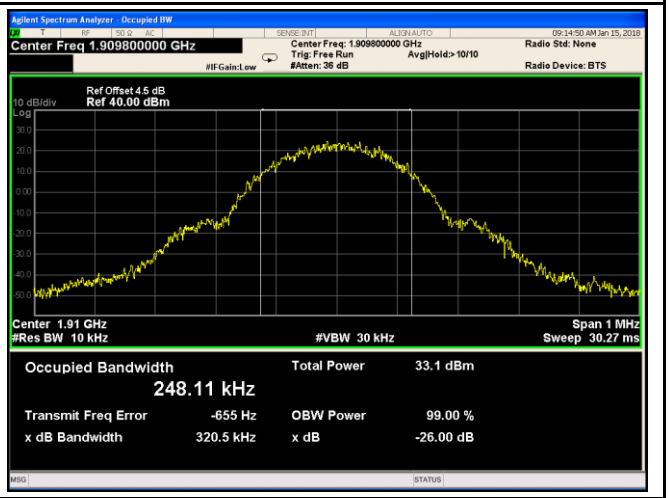
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz

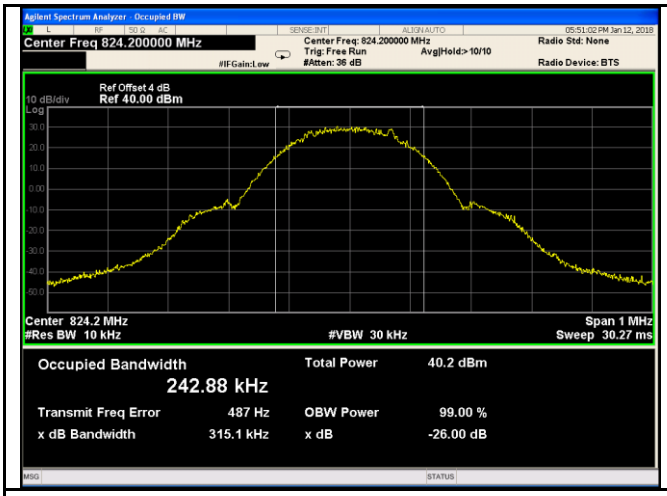


PCS 1900 BW - Mid CH 1880MHz

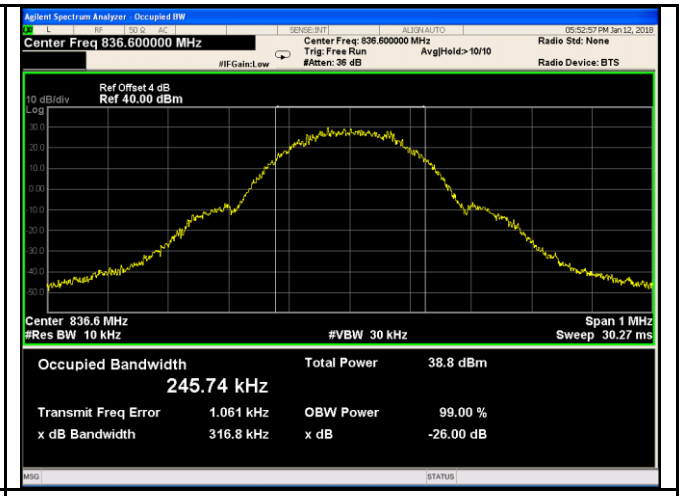


PCS 1900 BW - High CH 1910MHz

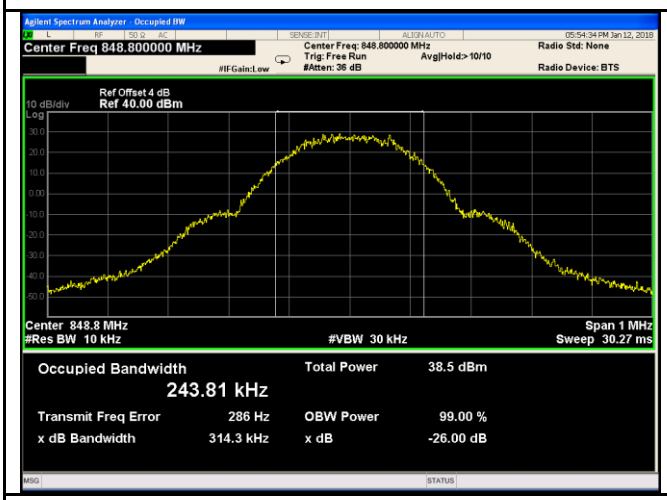
GPRS:



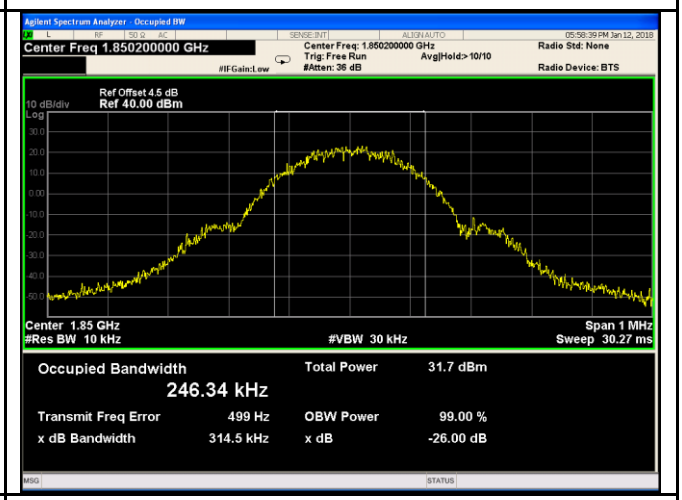
GSM 850 BW - Low CH 824.2MHz



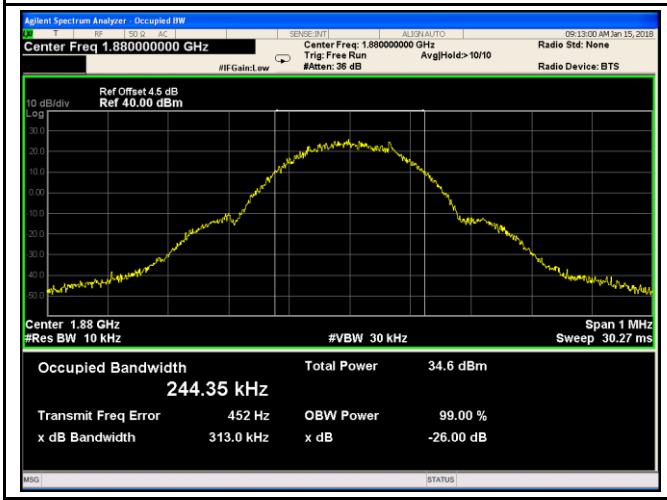
GSM 850 BW - Mid CH 836.6MHz



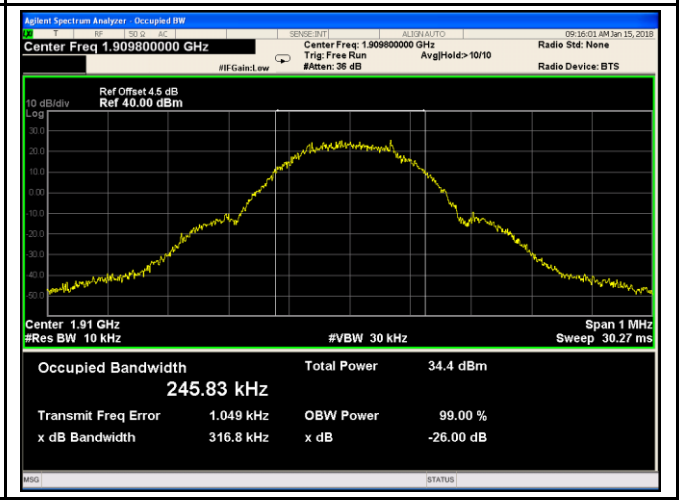
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz

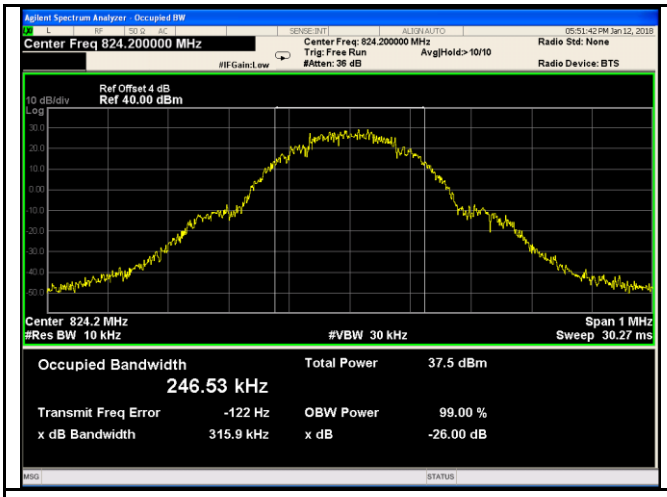


PCS 1900 BW - Mid CH 1880MHz

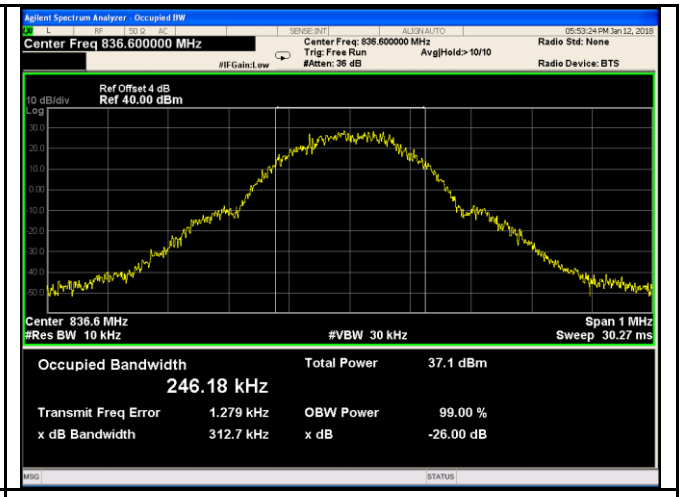


PCS 1900 BW - High CH 1910MHz

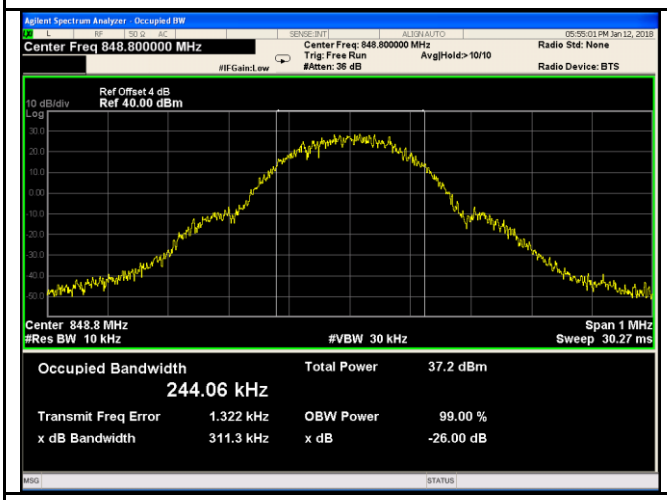
EGPRS (MCS5):



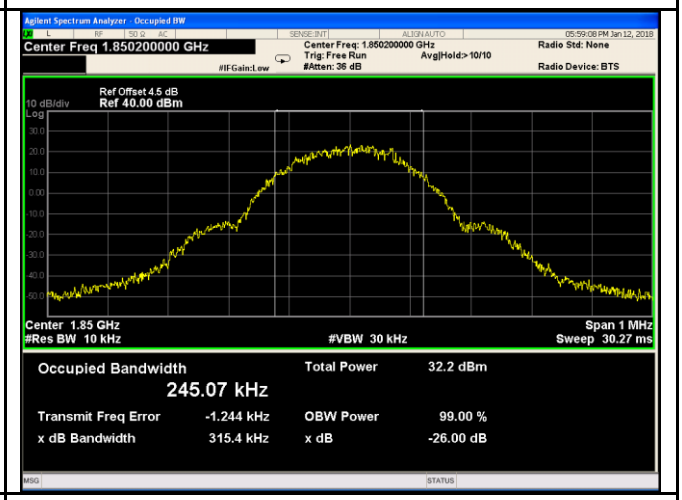
GSM 850 BW - Low CH 824.2MHz



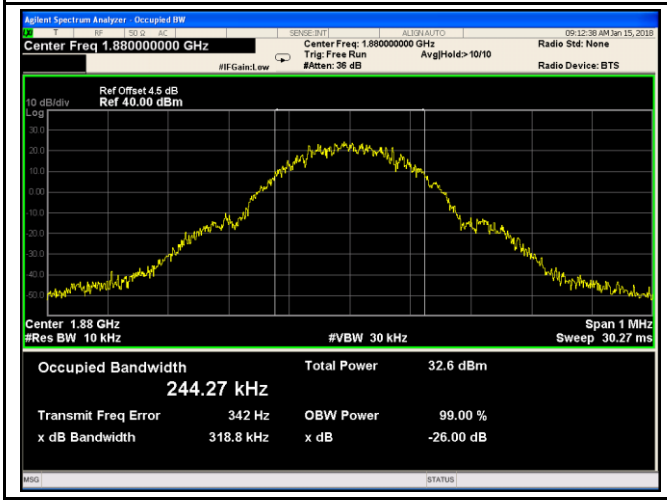
GSM 850 BW - Mid CH 836.6MHz



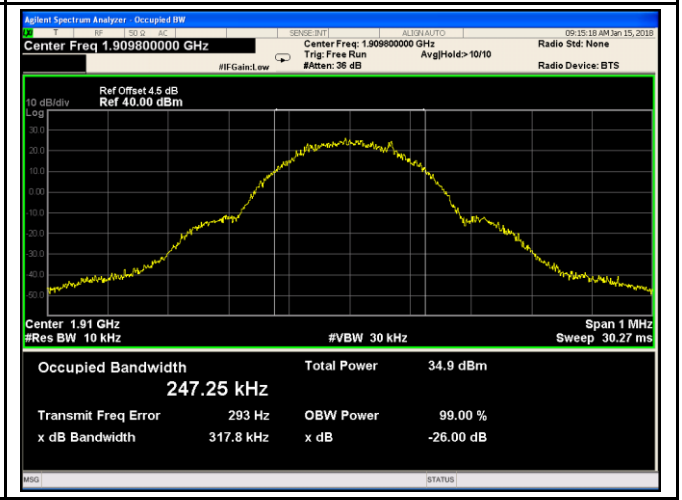
GSM 850 BW - High CH 848.8MHz



PCS 1900 BW - Low CH 1850MHz

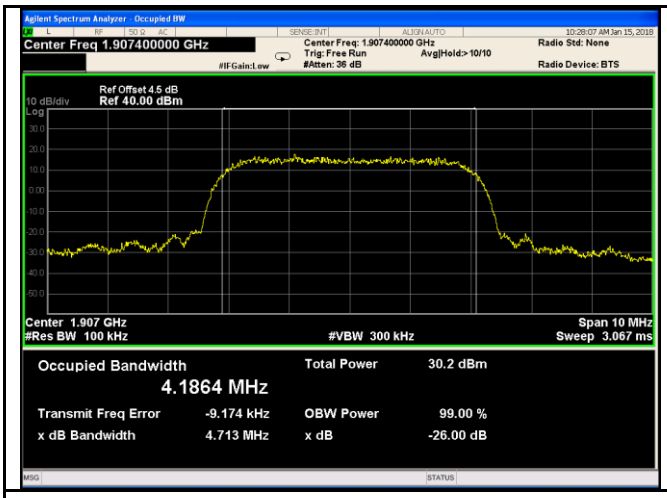


PCS 1900 BW - Mid CH 1880MHz

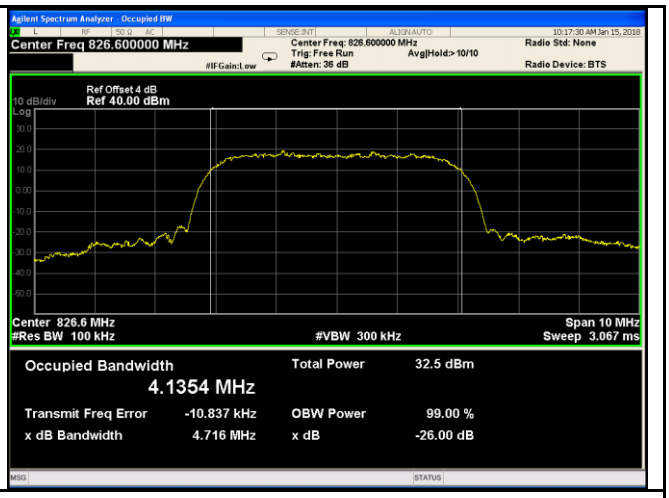


PCS 1900 BW - High CH 1910MHz

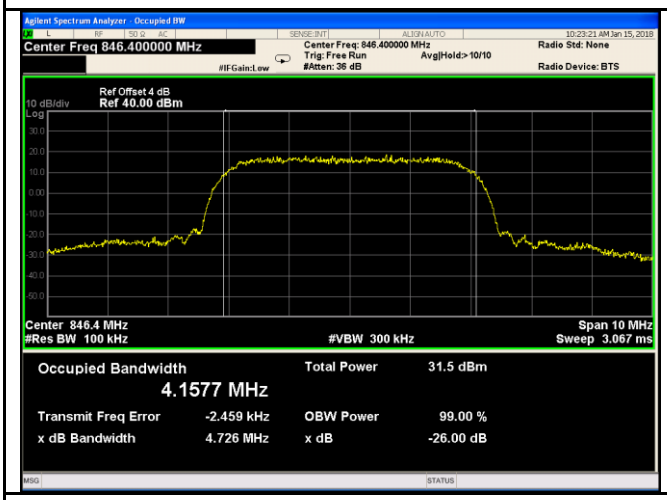
RMC:



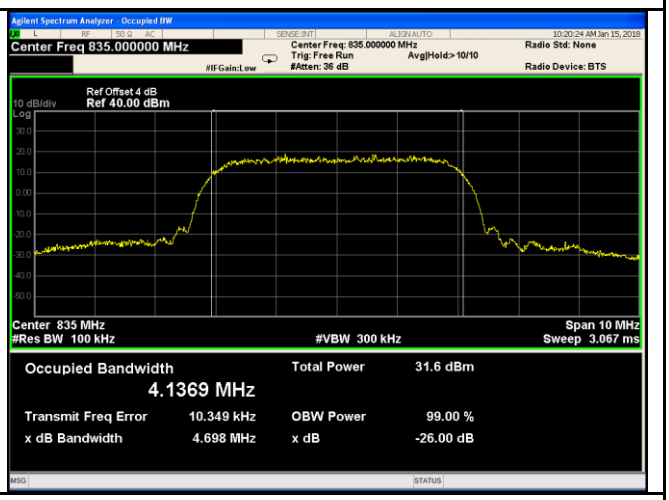
Band V BW - Low CH 826.6 MHz



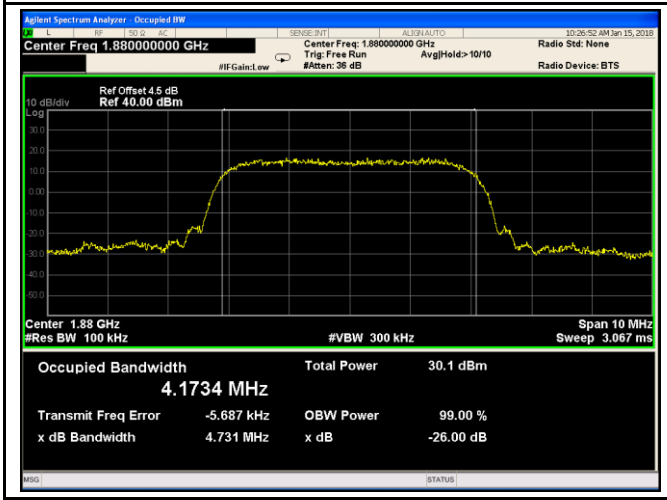
Band V BW - Mid CH 835.0 MHz



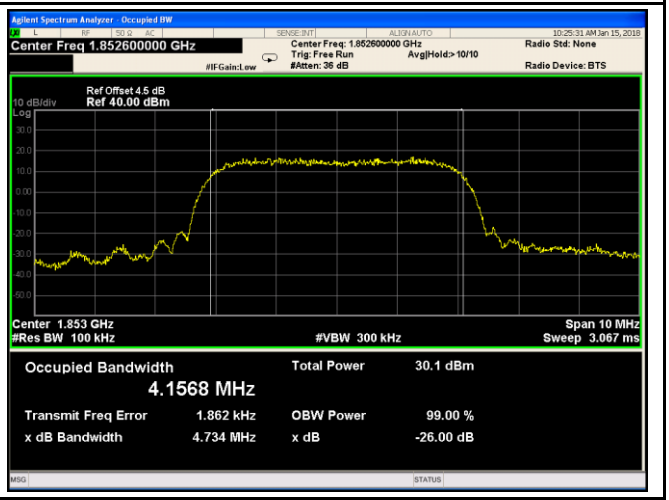
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1853MHz

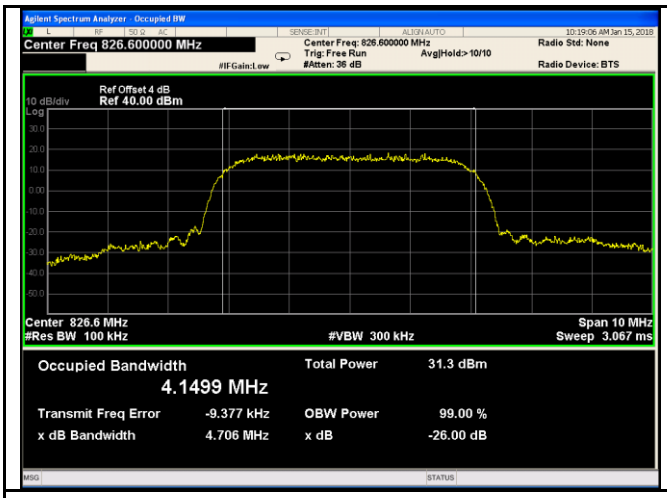


Band II BW - Mid CH 1880MHz

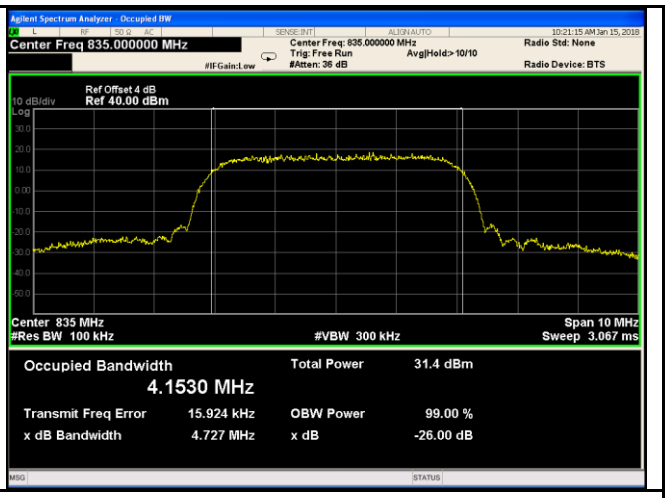


Band II BW - High CH 1907MHz

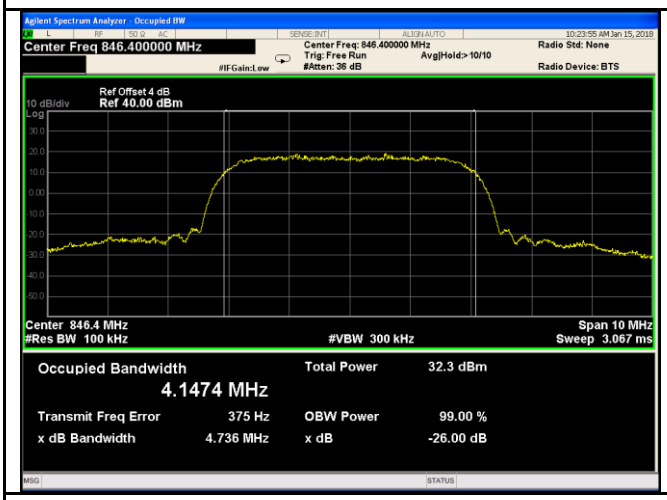
HSDPA:



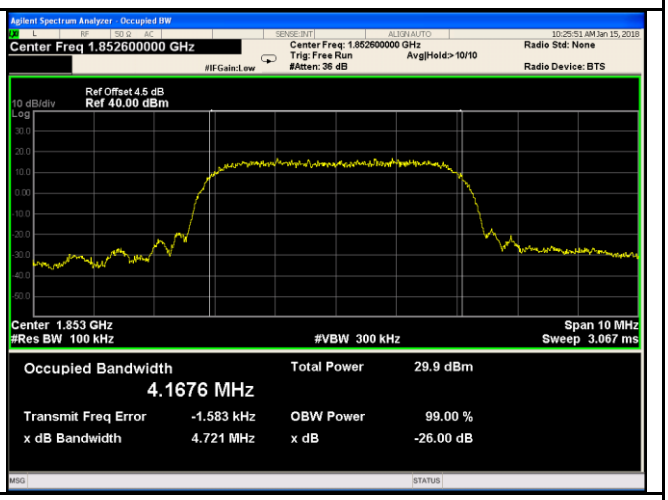
Band V BW - Low CH 826.6 MHz



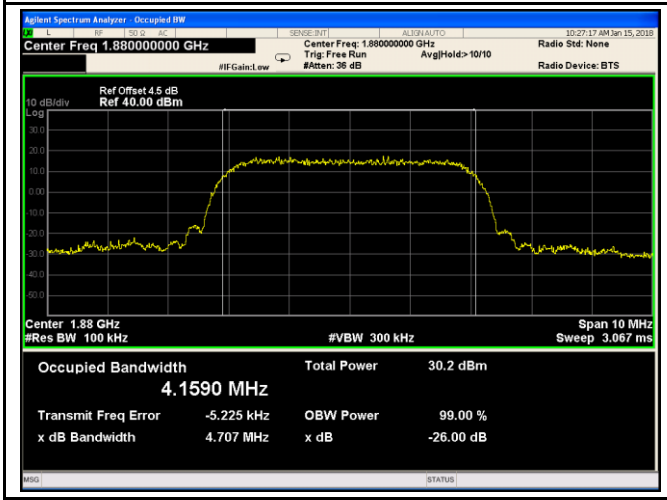
Band V BW - Mid CH 835.0 MHz



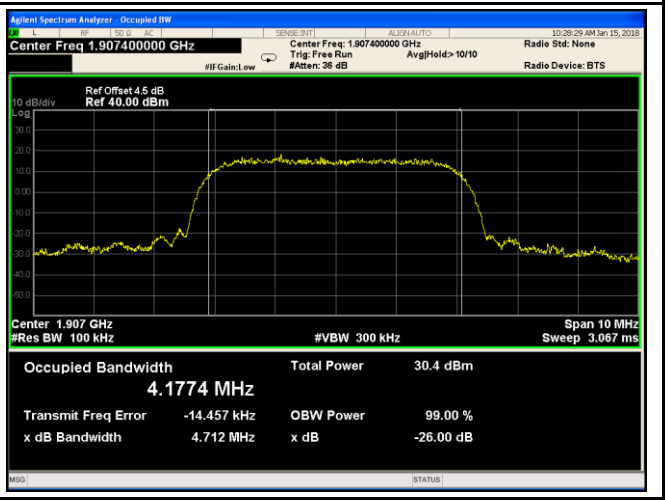
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1853MHz

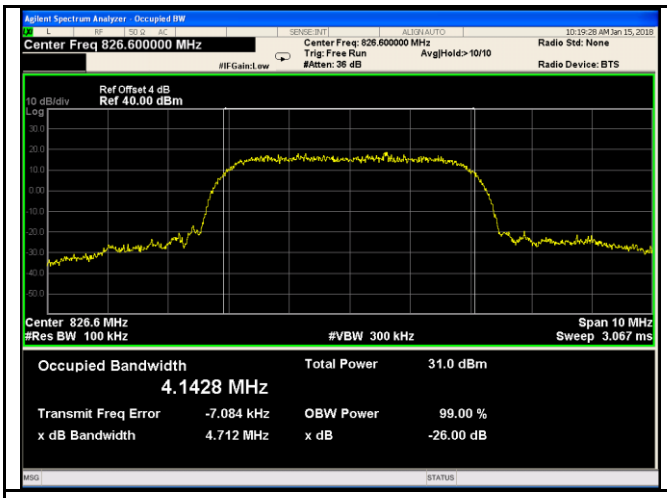


Band II BW - Mid CH 1880MHz

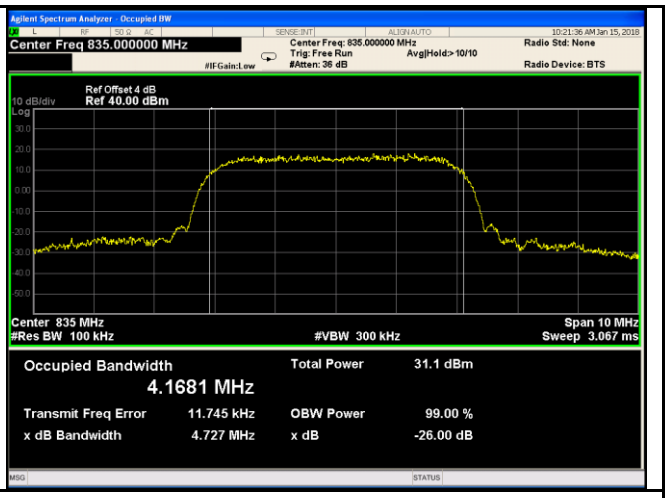


Band II BW - High CH 1907MHz

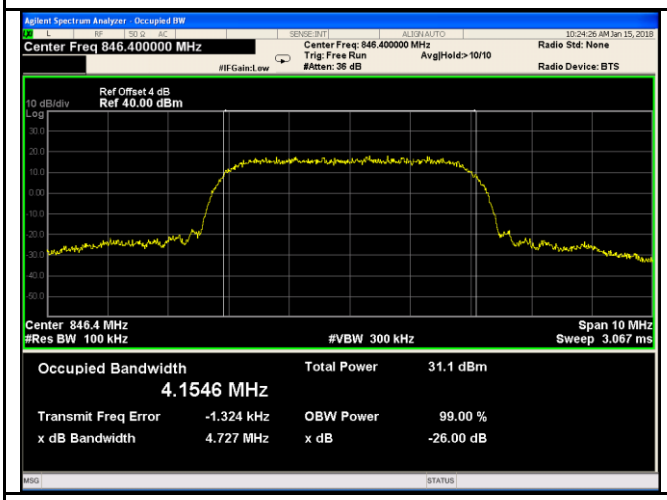
HSUPA:



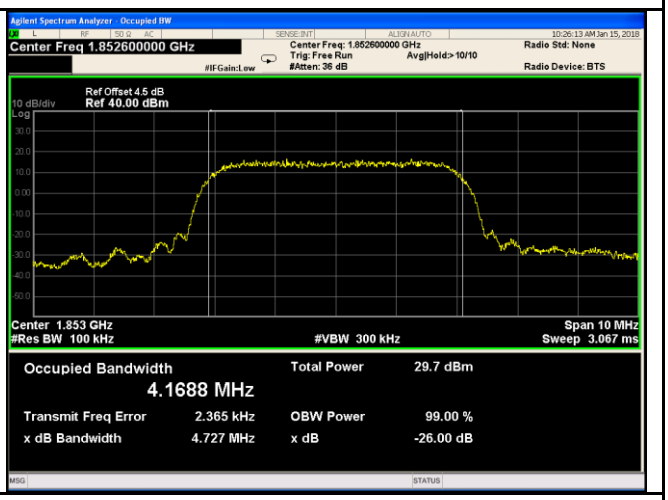
Band V BW - Low CH 826.6 MHz



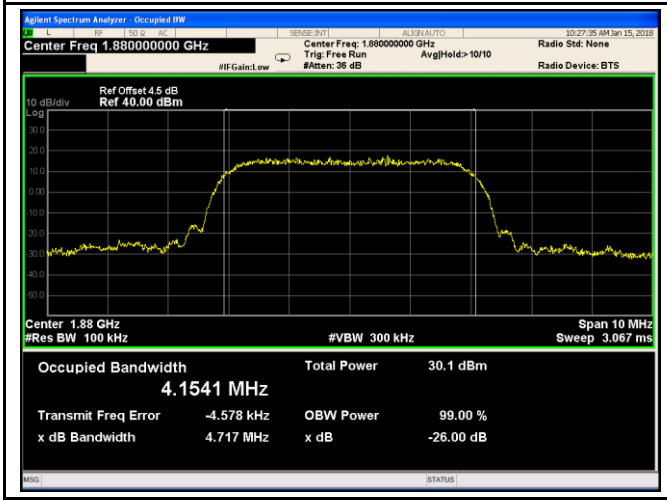
Band V BW - Mid CH 835.0 MHz



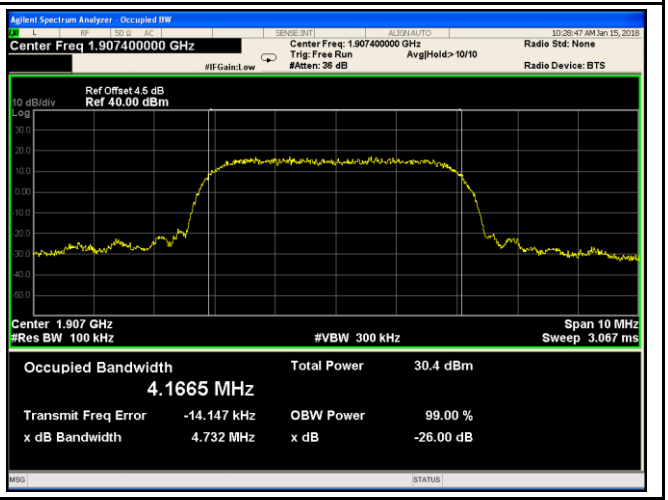
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1853MHz



Band II BW - Mid CH 1880MHz

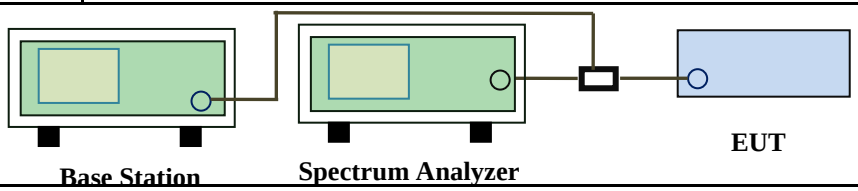


Band II BW - High CH 1907MHz

6.5 Spurious Emissions at Antenna Terminals

Temperature	26 °C
Relative Humidity	57%
Atmospheric Pressure	1025mbar
Test date :	January 25, 2018
Tested By :	Aaron Liang

Requirement(s):

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

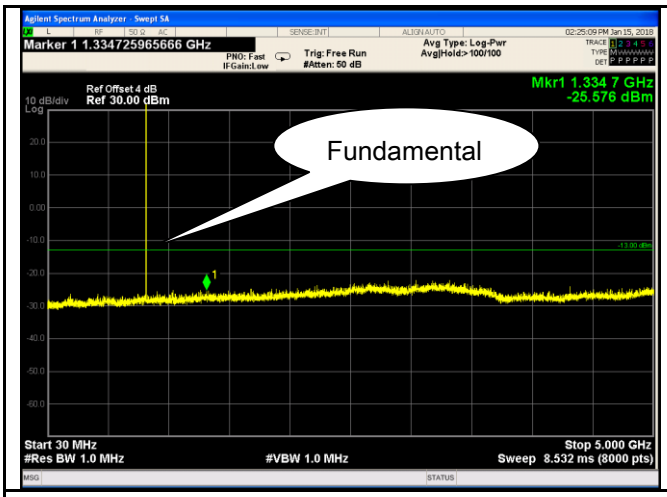
Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

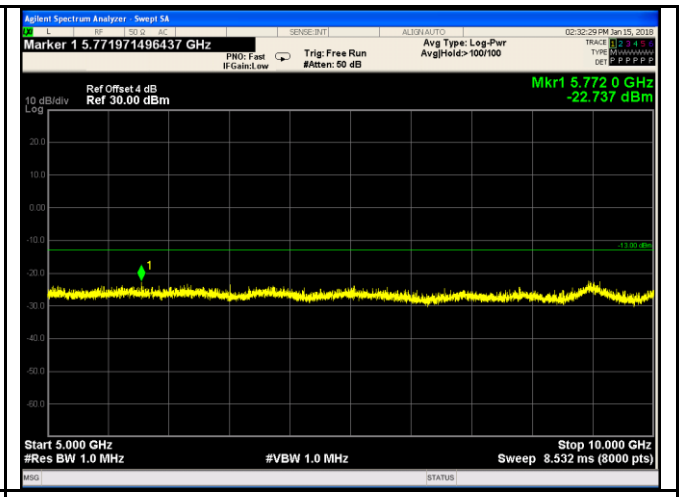
Test Plots

GSM Voice:

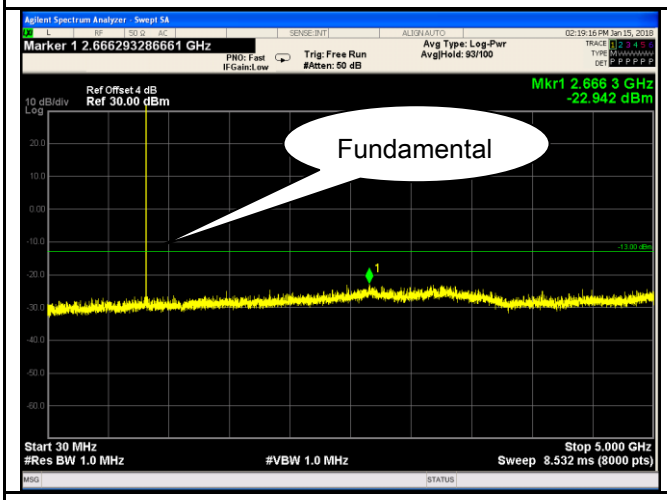
Cellular Band (Part 22H) result



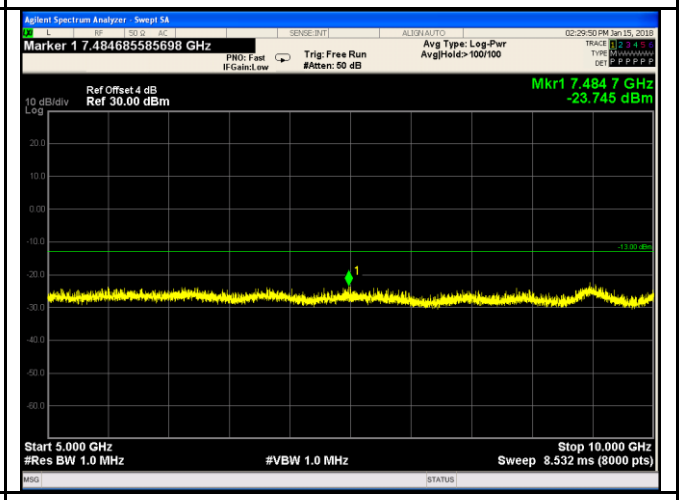
GSM 850 - Low Channel-1



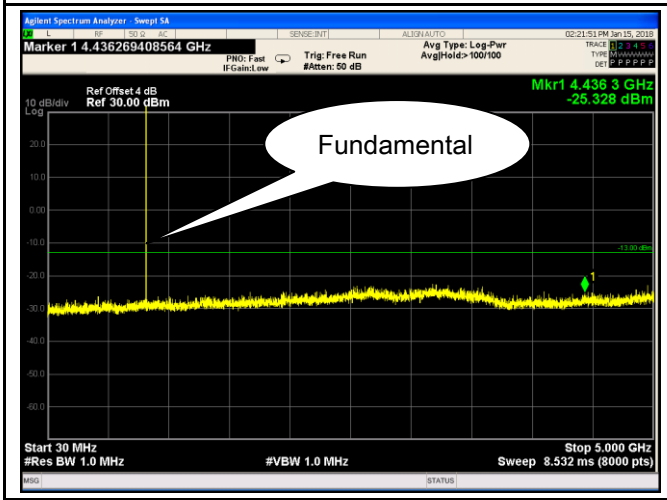
GSM 850 - Low Channel-2



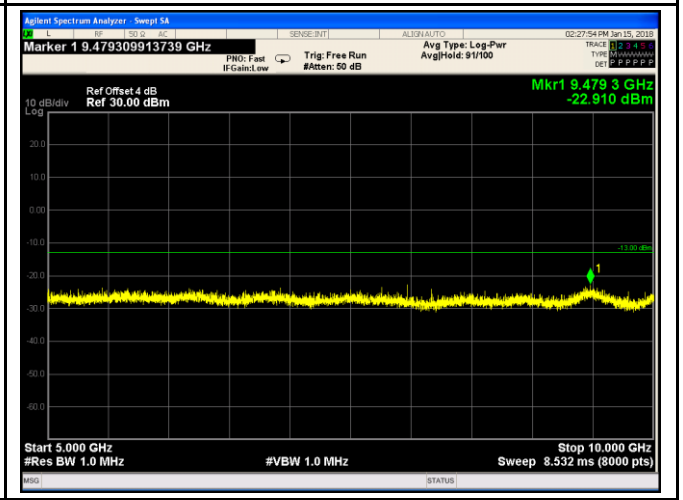
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

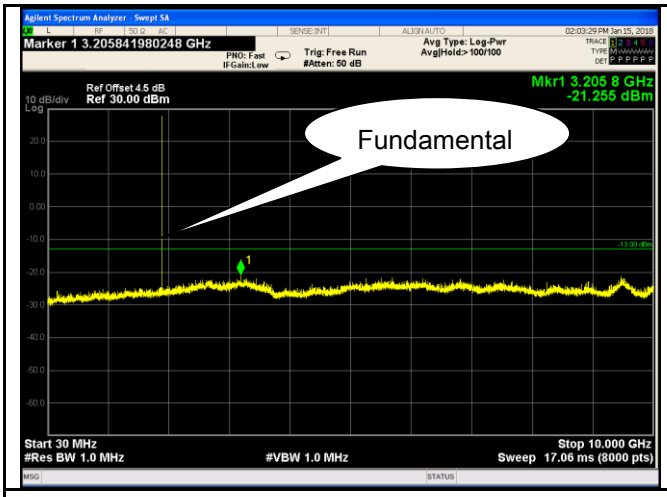


GSM 850 - High Channel-1

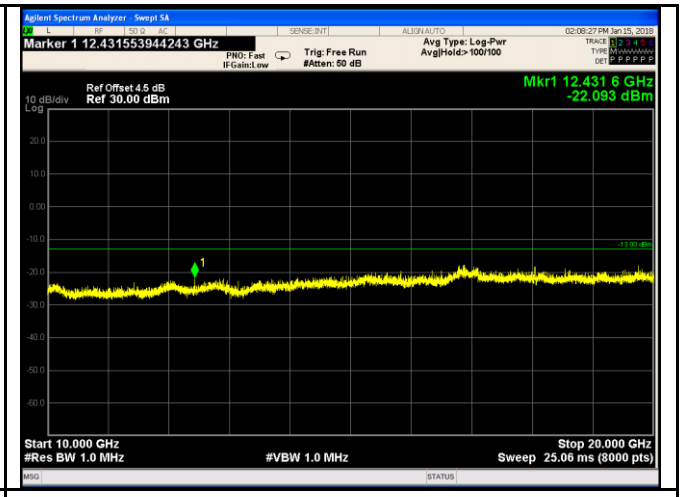


GSM 850 - High Channel-2

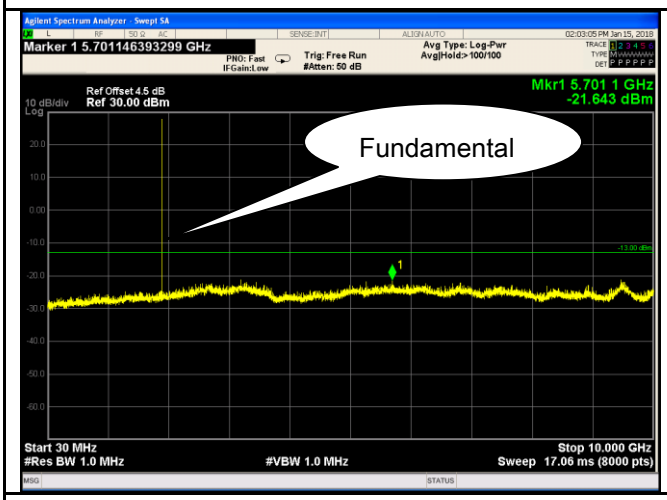
PCS Band (Part24E) result



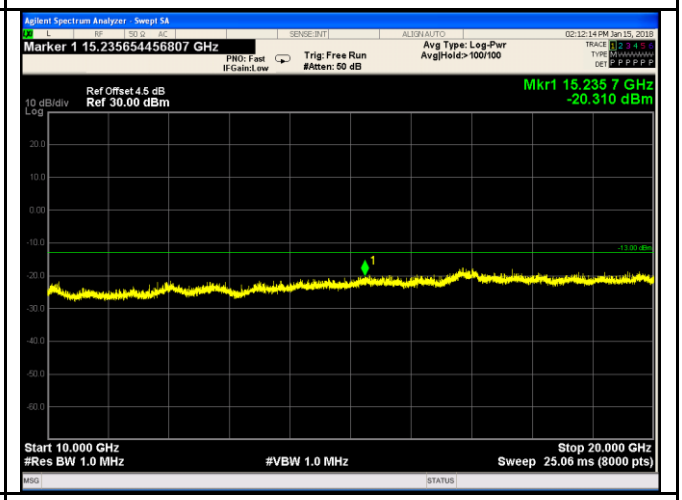
PCS1900 - Low Channel-1



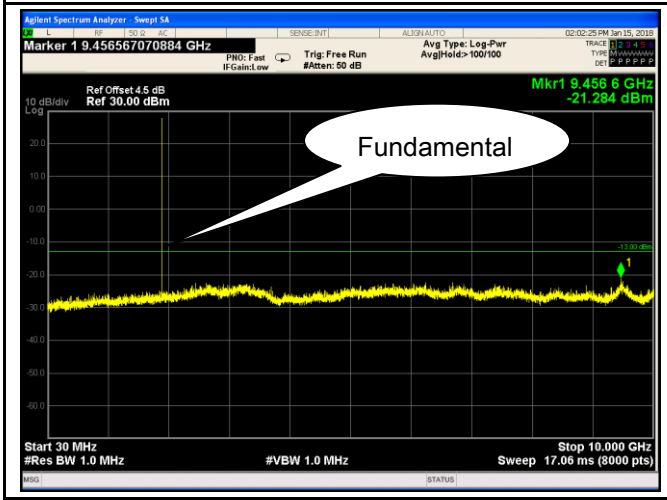
PCS 1900 - Low Channel-2



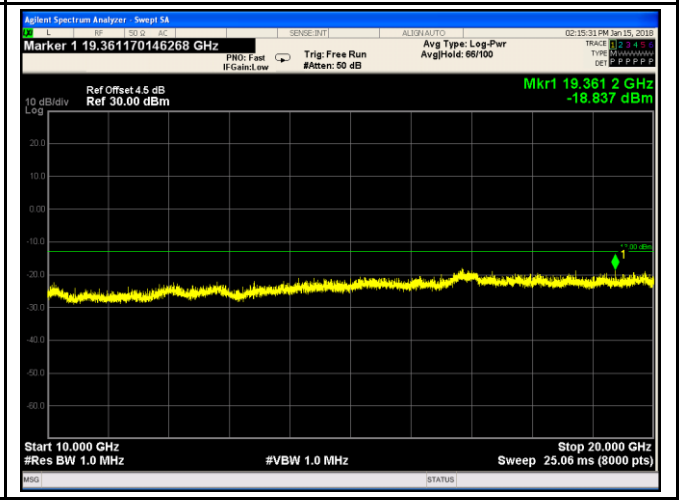
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



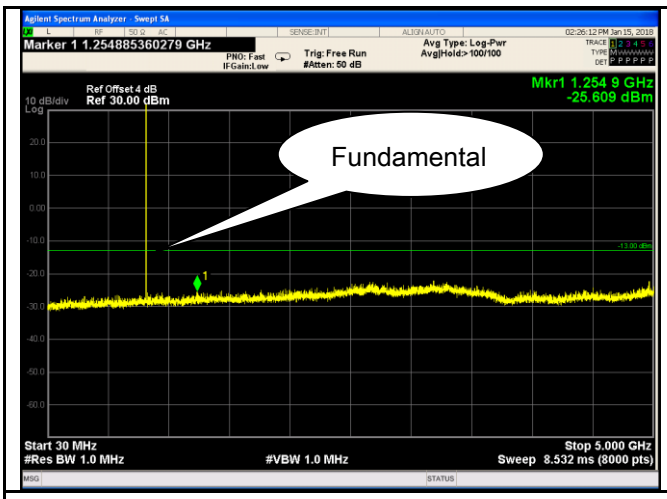
PCS1900 - High Channel-1



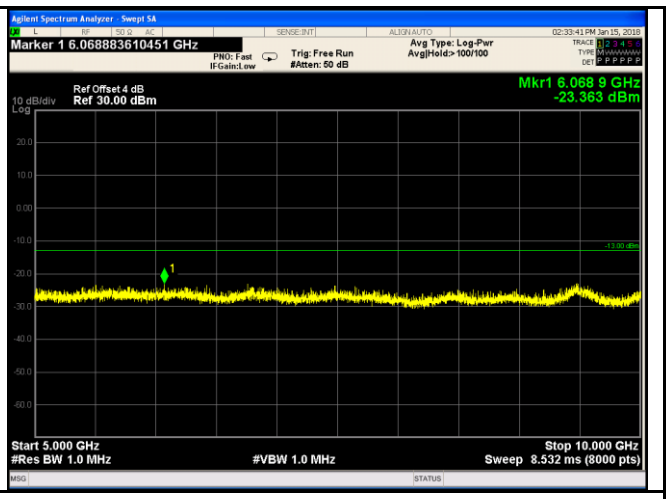
PCS 1900 - High Channel-2

GPRS:

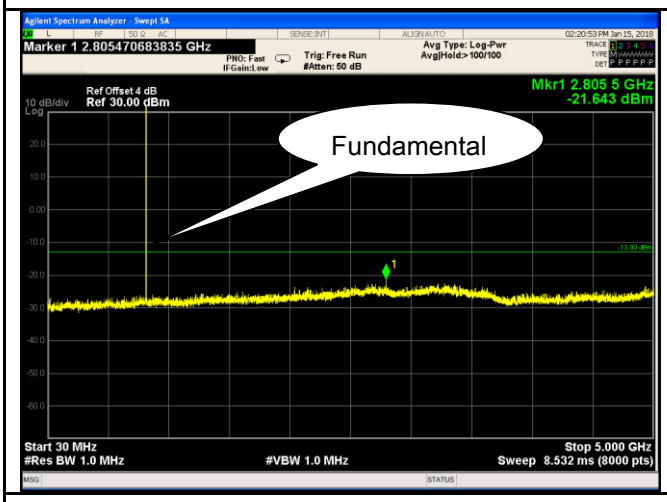
Cellular Band (Part 22H) result



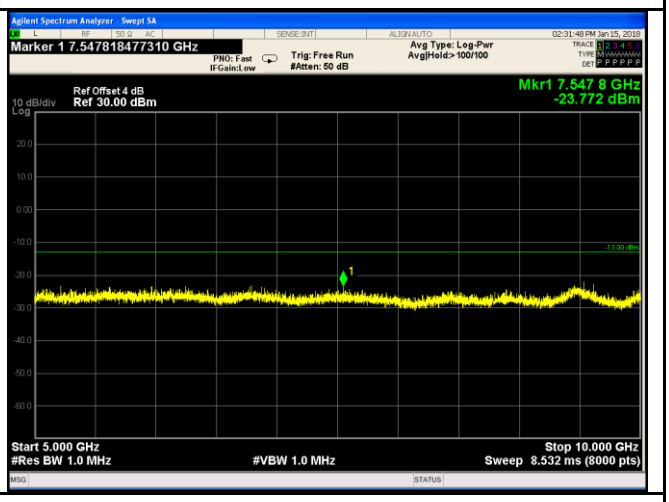
GSM 850 - Low Channel-1



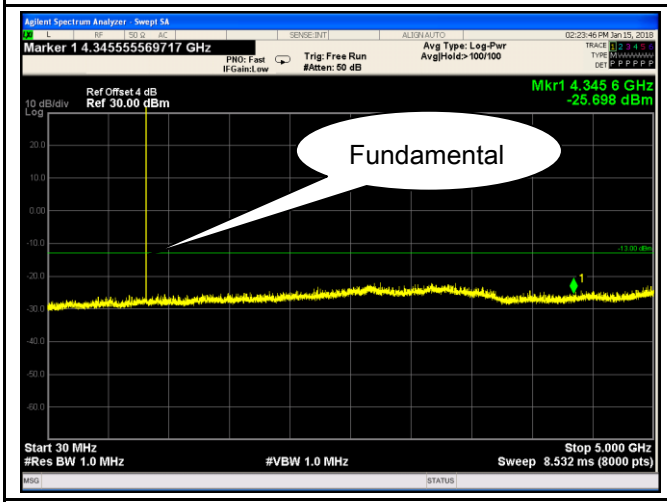
GSM 850 - Low Channel-2



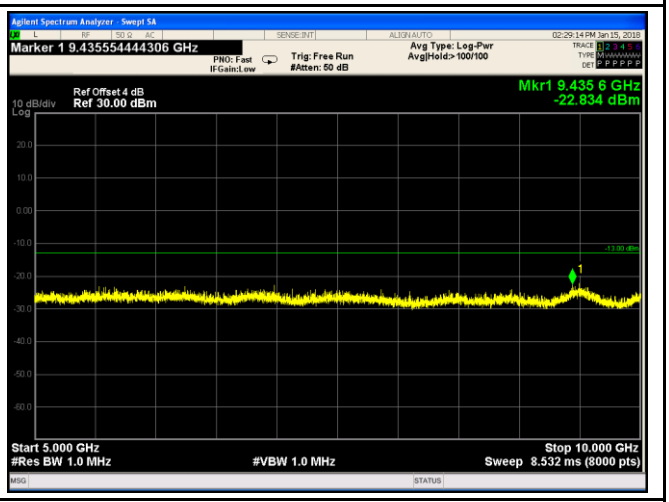
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

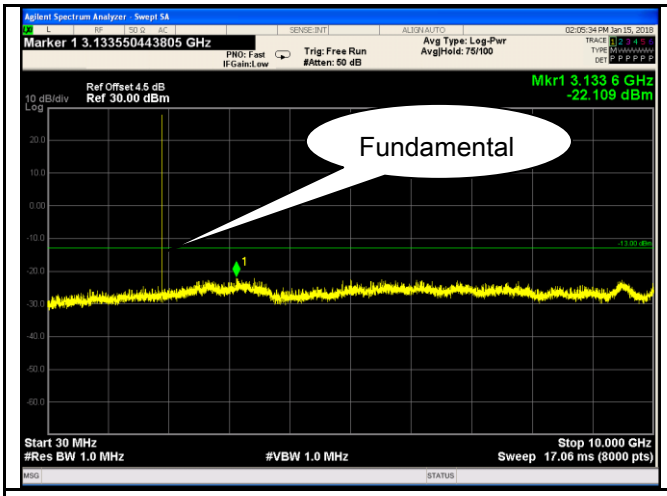


GSM 850 - High Channel-1

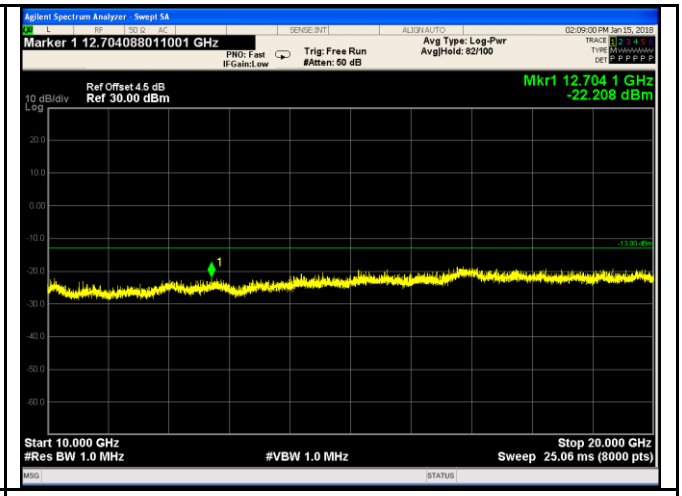


GSM 850 - High Channel-2

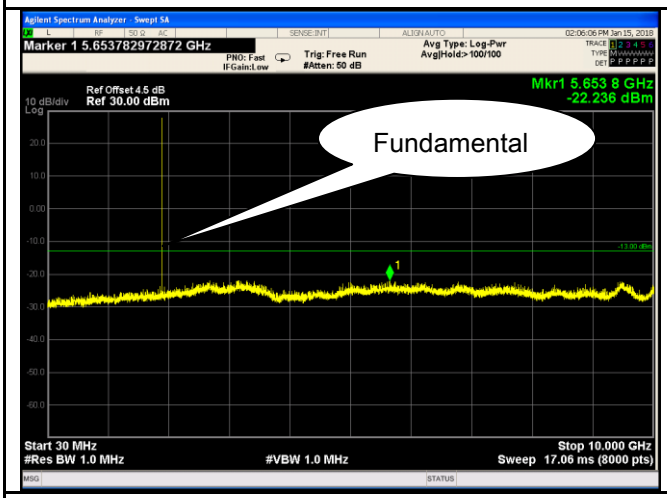
PCS Band (Part24E) result



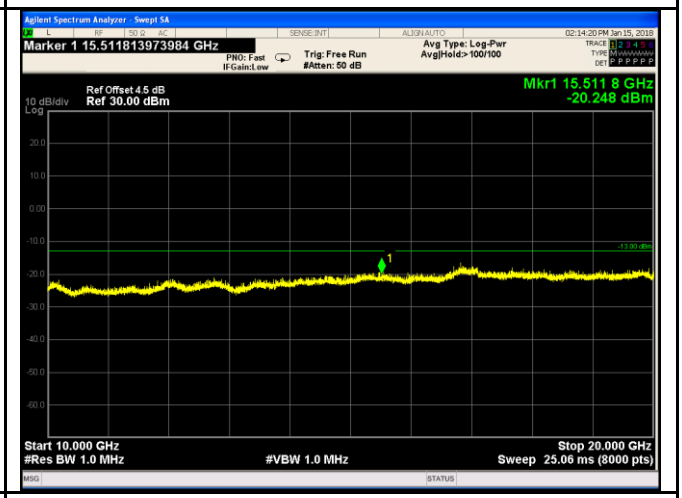
PCS1900 - Low Channel-1



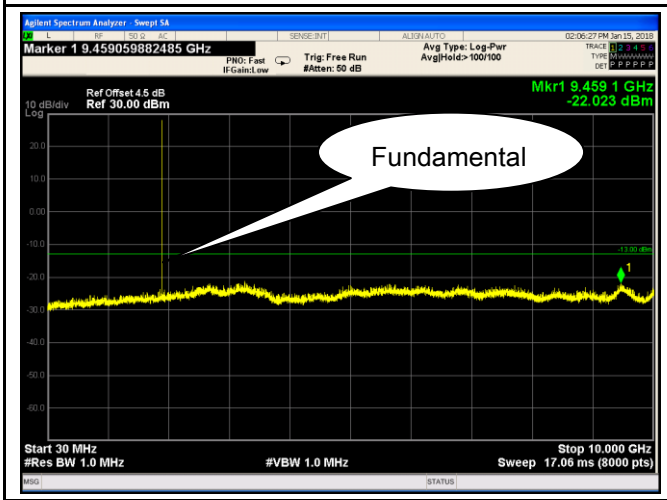
PCS 1900 - Low Channel-2



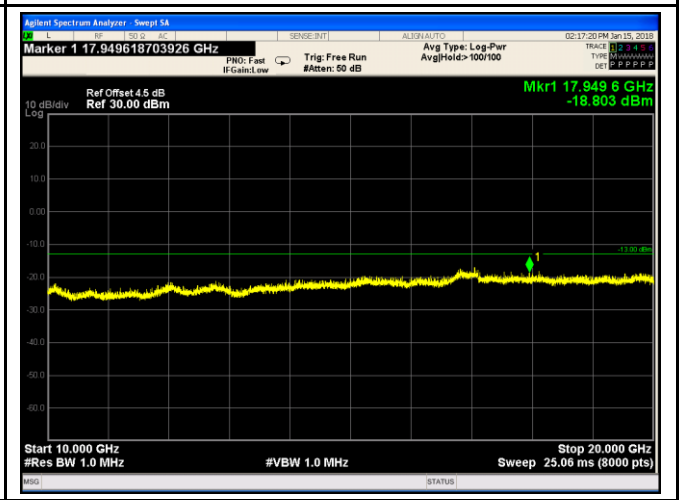
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



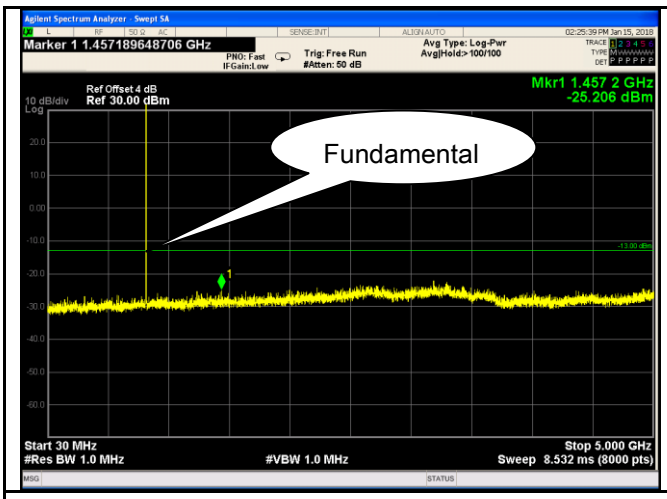
PCS1900 - High Channel-1



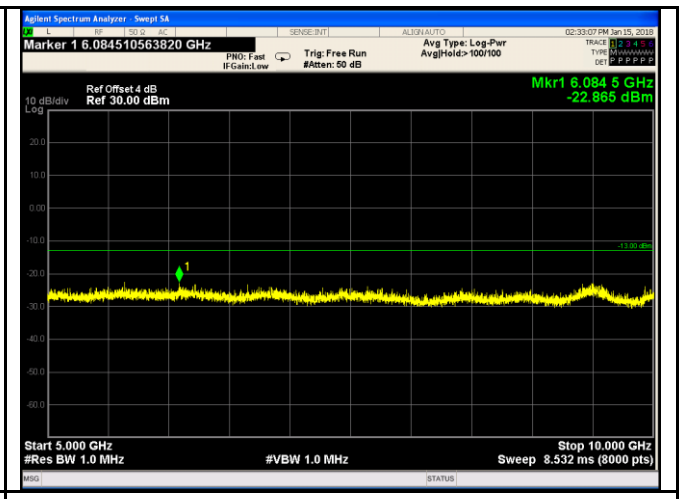
PCS 1900 - High Channel-2

EGPRS (MSC 5):

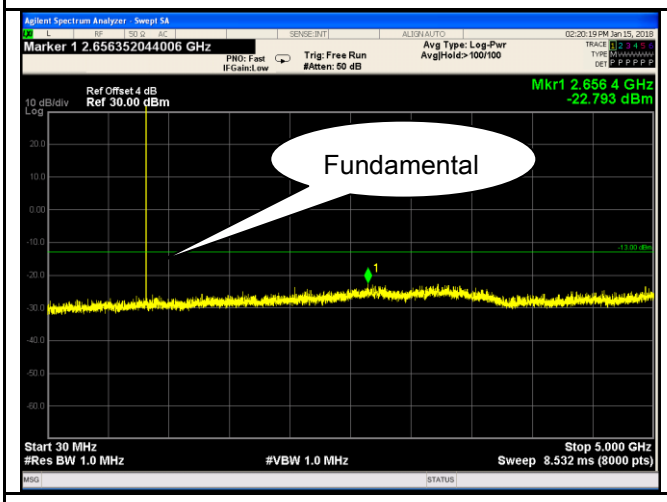
Cellular Band (Part 22H) result



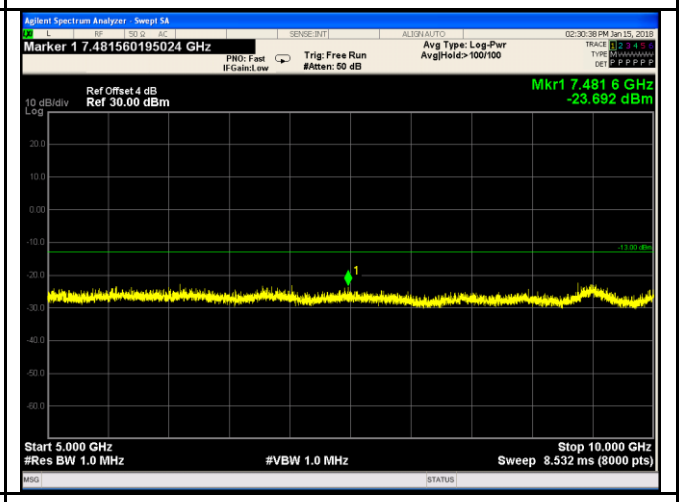
GSM 850 - Low Channel-1



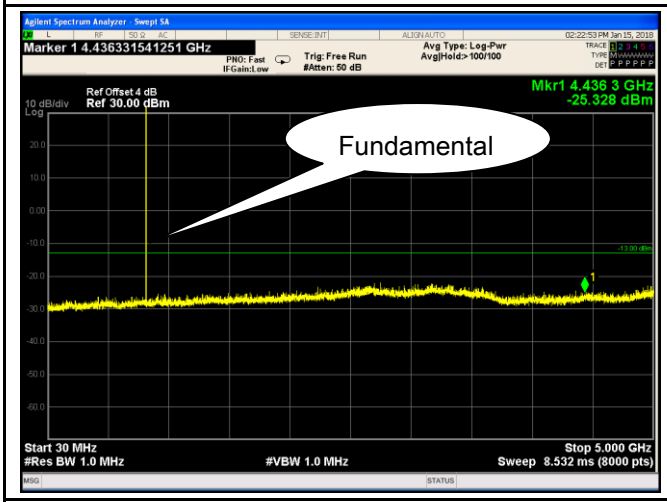
GSM 850 - Low Channel-2



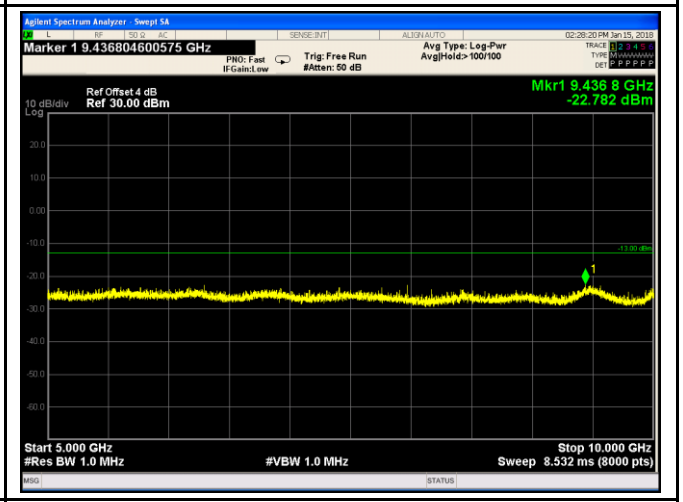
GSM 850 Middle Channel-1



GSM 850 Middle Channel-2

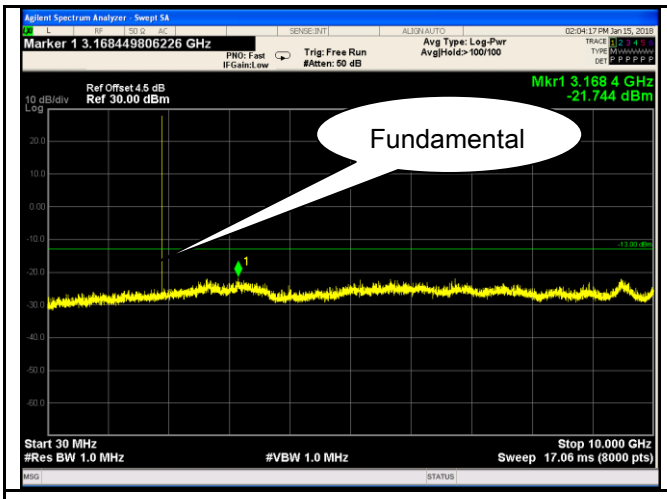


GSM 850 - High Channel-1

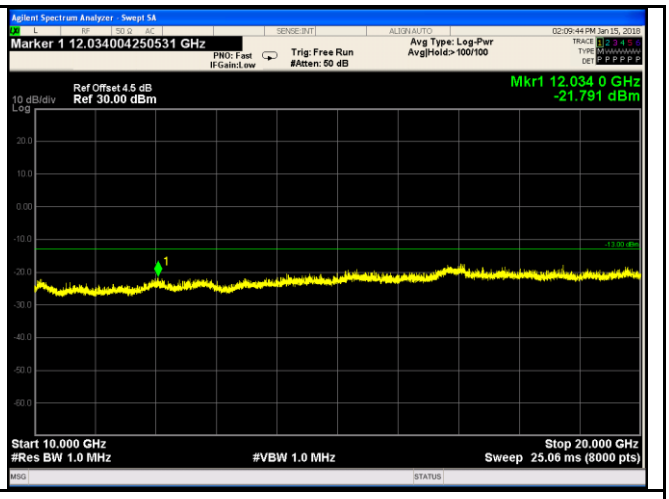


GSM 850 - High Channel-2

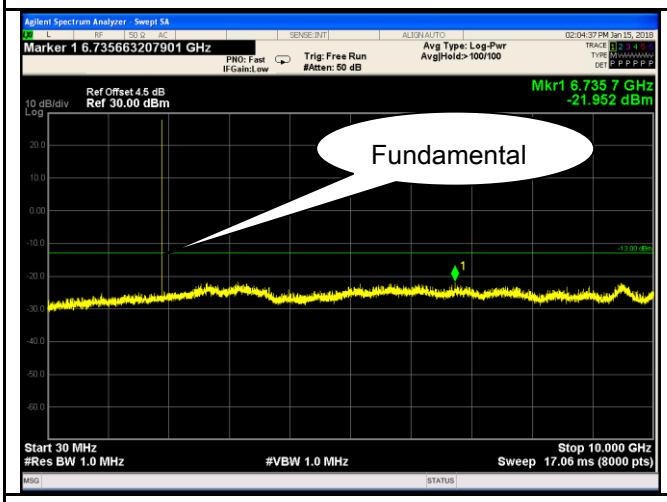
PCS Band (Part24E) result



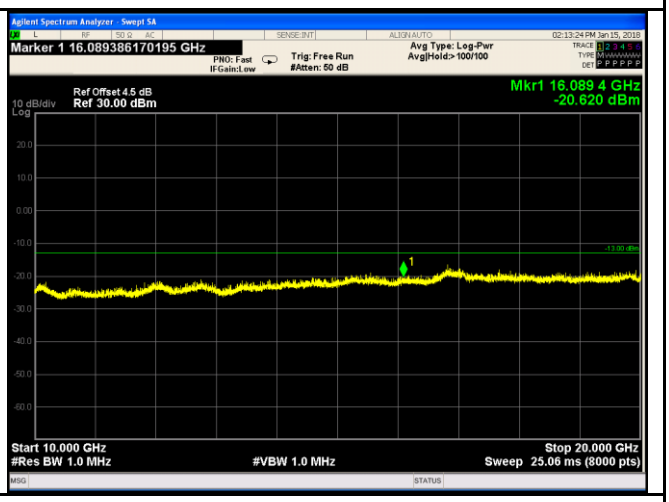
PCS1900 - Low Channel-1



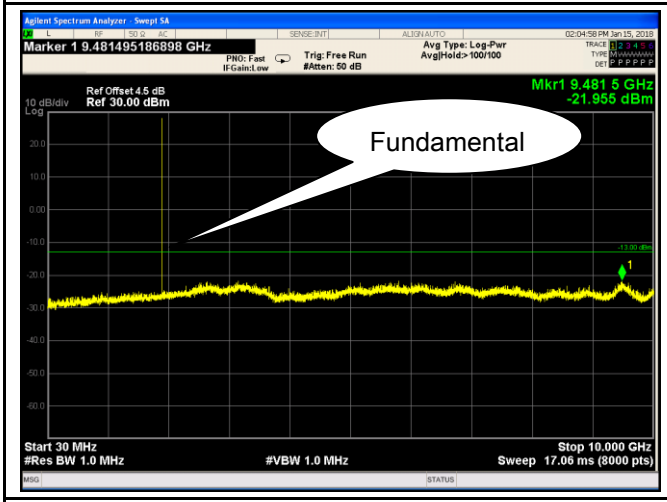
PCS 1900 - Low Channel-2



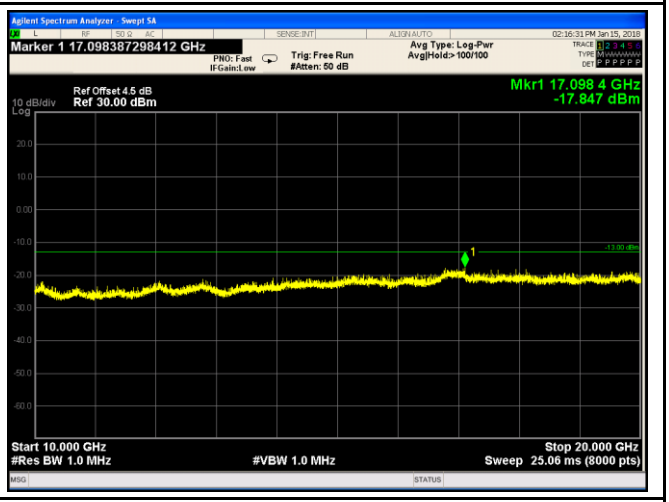
PCS1900 - Middle Channel-1



PCS 1900 - Middle Channel-2



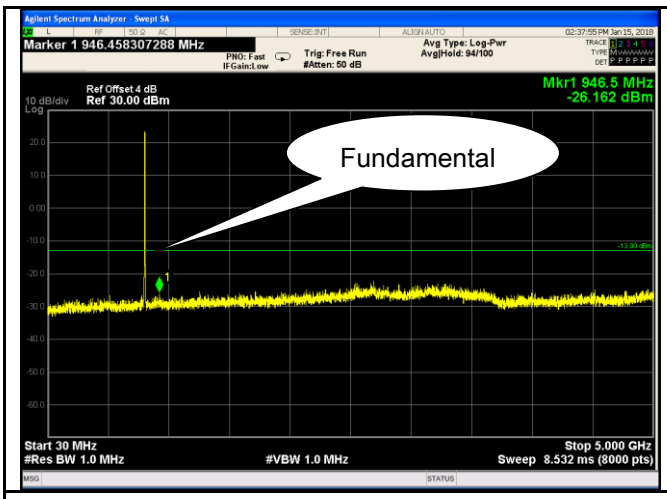
PCS1900 - High Channel-1



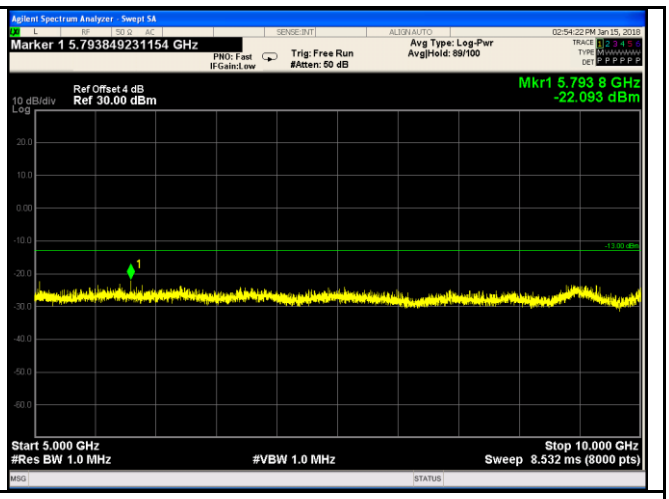
PCS 1900 - High Channel-2

RMC

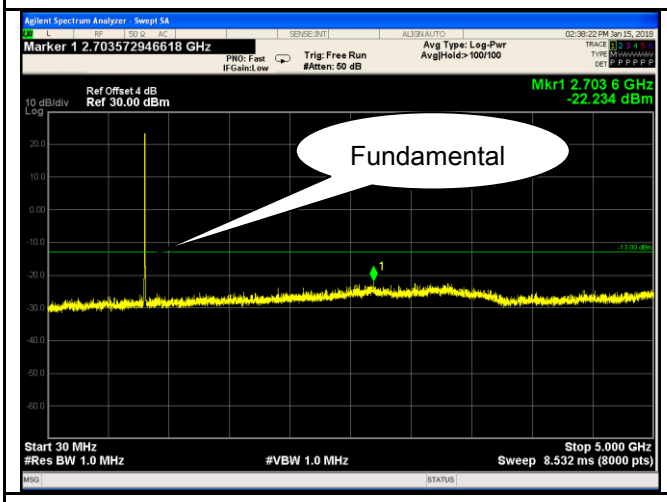
UMTS-FDD Band V (Part 22H)



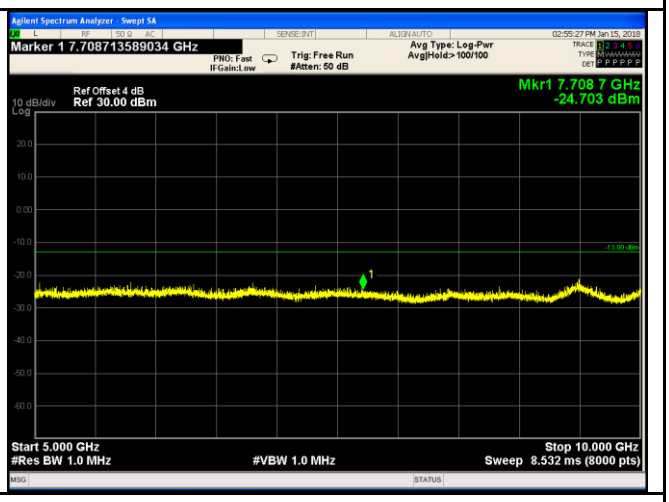
Band V - Low Channel-1



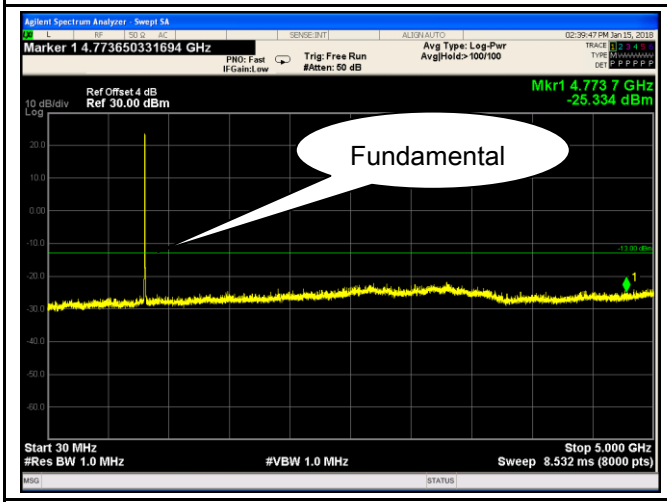
Band V - Low Channel-2



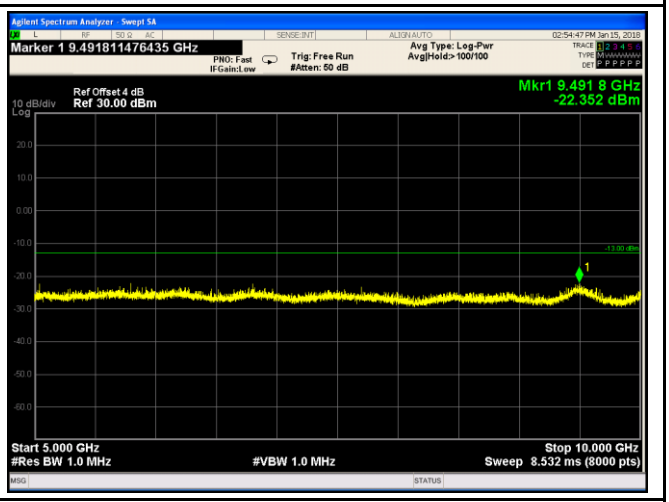
Band V - Middle Channel-1



Band V - Middle Channel-2



Band V - High Channel-1



Band V - High Channel-2