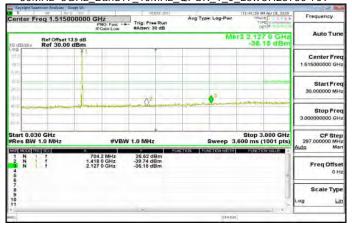
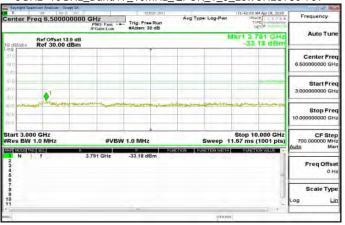




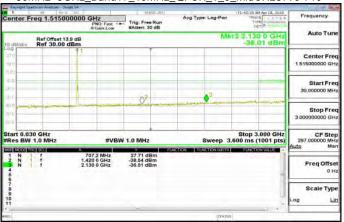
### 30MHz~3GHz\_Band17\_10MHz\_QPSK\_1\_0\_LowCH23780-709



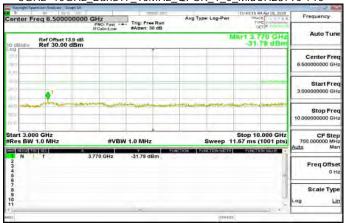
### 3GHz~10GHz\_Band17\_10MHz\_QPSK\_1\_0\_LowCH23780-709



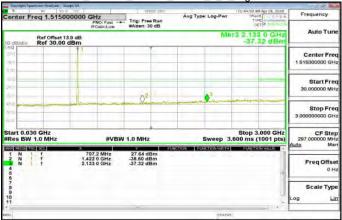
### 30MHz~3GHz\_Band17\_10MHz\_QPSK\_1\_0\_MidCH23790-710



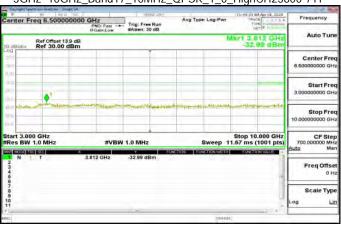
### 3GHz~10GHz\_Band17\_10MHz\_QPSK\_1\_0\_MidCH23790-710



### 30MHz~3GHz\_Band17\_10MHz\_QPSK\_1\_0\_HighCH23800-711



## 3GHz~10GHz\_Band17\_10MHz\_QPSK\_1\_0\_HighCH23800-711



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# FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

#### 9.1 Standard Applicable

According to FCC §2.1053,

FCC §22.917(a), §24.238(a)

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

### FCC §27.53(g)

Compliance for operations in the 600 MHz, 698-746 MHz, 746-758 MHz and the 776-788 MHz band with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber **Equipment** 

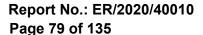
Frequency (MHz)	Attenuation (dB)
<2200	$43 + 10 \log_{10}(p)$
2200 - 2288	$70 + 10 \log_{10}(p)$
2288 - 2292	$67 + 10 \log_{10}(p)$
2292 - 2296	$61 + 10 \log_{10}(p)$
2296 - 2300	$55 + 10 \log_{10}(p)$
2300 - 2305	$43 + 10 \log_{10}(p)$
2305 - 2320	$43 + 10 \log_{10}(p)^{\text{Note}}$
2320 - 2324	$55 + 10 \log_{10}(p)$
2324 - 2328	$61 + 10 \log_{10}(p)$
2328 - 2337	$67 + 10 \log_{10}(p)$
2337 - 2341	$61 + 10 \log_{10}(p)$
2341 - 2345	$55 + 10 \log_{10}(p)$
2345 - 2360	$43 + 10 \log_{10}(p)^{\text{Note}}$
2360 - 2365	$43 + 10 \log_{10}(p)$
2365 - 2395	$70 + 10 \log_{10}(p)$
>2395	$43 + 10 \log_{10}(p)$

**Note:** Measured at the edges of the highest and lowest frequency range(s) in which the equipment is designed to operate. See Section 1.2 for the permitted frequency ranges for various equipment types.

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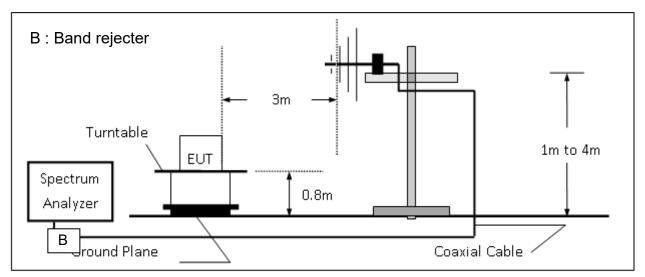
SGS Taiwan Ltd. i



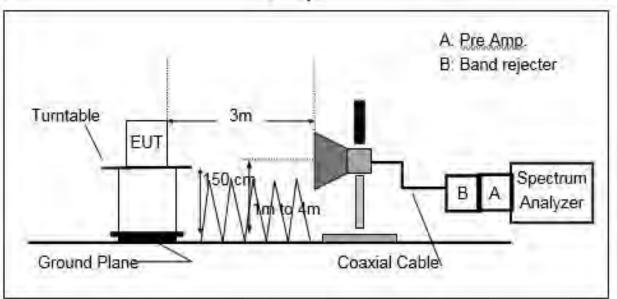


#### 9.2 **EUT Setup**

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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#### 9.3 **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)

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# **Measurement Equipment Used:**

E	RP, EIRP MEASU	JREMENT EQUIPI	MENT List 96	6 Chamber	
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Bi-log Antenna	SCHWAZBECK	VULB9168	378	Jan. 3rd, 2020	Jan. 2nd, 2021
Horn Antenna	Schwarzbeck	BBHA9120D	1441	Aug. 20th, 2019	Aug. 19th, 2020
Horn Antenna	Schwarzbeck	BBHA9170	184	Dec. 25th, 2019	Dec. 24th, 2020
Horn Antenna	Schwarzbeck	BBHA9170	185	Aug. 7th, 2019	Aug. 6th, 2020
Horn Antenna	Schwarzbeck	BBHA9120D	D803	Dec. 20th, 2019	Dec. 19th, 2020
Bi-log Antenna	TESEO	CBL 6112D	35242 & AT-N0555	Jan. 13th, 2020	Jan. 12th, 2021
PXA Spectrum Ana- lyzer	Agilent	N9030A	MY53120760	Apr. 22nd, 2019	Apr. 21st, 2020
Signal Generator	Agilent	N5183A	MY50140591	Dec. 20th, 2019	Dec. 19th, 2020
Pre-Amplifier	HP	8449B	3008A00578	Jan. 2nd, 2020	Jan. 1st, 2021
Pre-Amplifier	HP	8447D	2944A07676	Jan. 2nd, 2020	Jan. 1st, 2021
Pre-Amplifier	EMC Instruments	EMC184045B	980135	Jan. 2nd, 2020	Jan. 1st, 2021
Filter 635-920	Micro-Tronics	WI	4	Jan. 2nd, 2020	Jan. 1st, 2021
Filter 800-1000	Micro-Tronics	EWT	M1	Jan. 2nd, 2020	Jan. 1st, 2021
Filter 1700-2000	Micro-Tronics	EWT	М3	Jan. 2nd, 2020	Jan. 1st, 2021
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	Jan. 2nd, 2020	Jan. 1st, 2021
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	Jan. 2nd, 2020	Jan. 1st, 2021
Low Loss Cable	Huber Suhner	966_RX	9	Jan. 2nd, 2020	Jan. 1st, 2021
Low Loss Cable	Huber Suhner	966 TX	1	Jan. 2nd, 2020	Jan. 1st, 2021
Radio Communication Analyer	Anritsu	MT8820C	6200995019	Apr. 1st, 2020	Mar. 31st, 2021
Radio Communication Analyer	Anritsu	MT8815B	6200711454	Apr. 1st, 2020	Mar. 31st, 2021

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#### 9.5 **Measurement Result:**

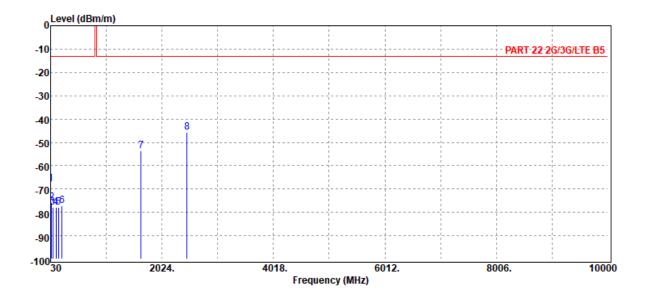
Report Number :ER-2020-40010 Test Date :2020-04-17

**Operation Mode** :GSM 850 Temp./Humi. :22.6/66

Test Mode :Tx CH Low Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :824.2 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		_
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-67.68	-39.86	-27.28	-0.54	-13.00	-54.68
49.40	-75.80	-62.43	-12.77	-0.60	-13.00	-62.80
68.80	-77.85	-69.97	-7.07	-0.81	-13.00	-64.85
128.94	-77.70	-69.59	-7.12	-0.99	-13.00	-64.70
172.59	-77.76	-74.17	-2.33	-1.26	-13.00	-64.76
233.70	-77.10	-74.10	-1.55	-1.45	-13.00	-64.10
1648.40	-53.59	-59.62	9.89	-3.86	-13.00	-40.59
2472.60	-45.83	-51.65	10.59	-4.77	-13.00	-32.83

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:2020-04-17

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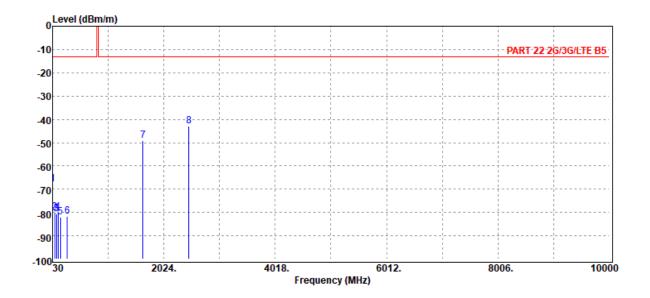
Report Number **Test Date** :ER-2020-40010

**Operation Mode** :GSM 850 Temp./Humi. :22.6/66

:Tx CH Low Test Mode Antenna Pol. :HORIZONTAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :824.2 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
00.00	07.07	20.05	07.00	0.54	40.00	54.07
30.00	-67.67	-39.85	-27.28	-0.54	-13.00	-54.67
68.80	-79.88	-72.00	-7.07	-0.81	-13.00	-66.88
94.99	-80.61	-71.81	-7.87	-0.93	-13.00	-67.61
128.94	-79.96	-71.85	-7.12	-0.99	-13.00	-66.96
172.59	-82.05	-78.46	-2.33	-1.26	-13.00	-69.05
289.96	-81.53	-78.43	-1.48	-1.62	-13.00	-68.53
1648.40	-49.19	-55.22	9.89	-3.86	-13.00	-36.19
2472.60	-43.01	-48.83	10.59	-4.77	-13.00	-30.01

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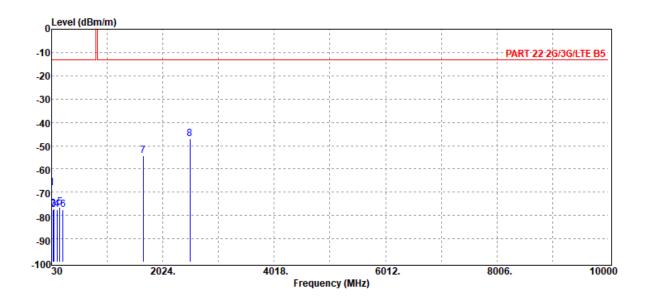
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 850 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :836.6 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-68.30	-40.48	-27.28	-0.54	-13.00	-55.30
52.31	-77.59	-65.73	-11.22	-0.64	-13.00	-64.59
68.80	-77.25	-69.37	-7.07	-0.81	-13.00	-64.25
128.94	-77.46	-69.35	-7.12	-0.99	-13.00	-64.46
175.50	-76.50	-73.22	-2.04	-1.24	-13.00	-63.50
232.73	-77.54	-74.59	-1.51	-1.44	-13.00	-64.54
1673.20	-54.25	-60.30	9.95	-3.90	-13.00	-41.25
2509.80	-46.94	-52.86	10.74	-4.82	-13.00	-33.94

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**Test Frequency** 

Report No.: ER/2020/40010

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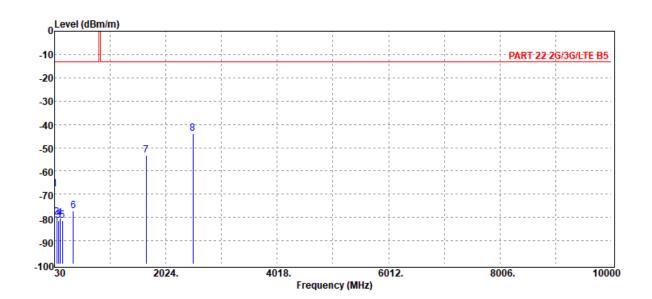
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 850 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :HORIZONTAL

**EUT Pol** :H Plane Engineer :Nick

:836.6 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
MHz	dBm	Output Level dBm	Gain dBi/dBd	Loss dB	dBm	dB
IVII 1Z	ubili	ubili	ubi/ubu	uБ	иын	иь
30.00	-67.65	-39.83	-27.28	-0.54	-13.00	-54.65
66.86	-79.98	-72.05	-7.14	-0.79	-13.00	-66.98
94.99	-81.17	-72.37	-7.87	-0.93	-13.00	-68.17
128.94	-80.40	-72.29	-7.12	-0.99	-13.00	-67.40
168.71	-81.26	-77.22	-2.78	-1.26	-13.00	-68.26
366.59	-77.00	-73.76	-1.51	-1.73	-13.00	-64.00
1673.20	-53.27	-59.32	9.95	-3.90	-13.00	-40.27
2509.80	-43.86	-49.78	10.74	-4.82	-13.00	-30.86

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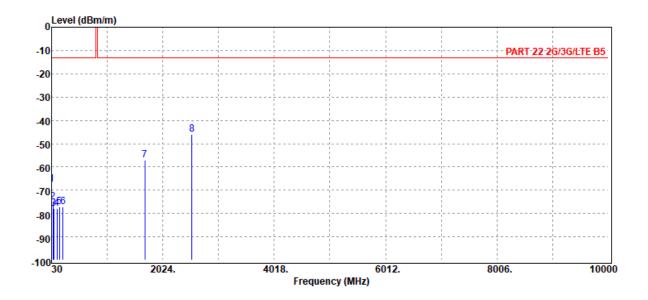
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 850 Temp./Humi. :22.6/66

Test Mode :Tx CH High Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :848.8 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
20.00	07.50	00.70	07.00	0.54	40.00	54.50
30.00	-67.58	-39.76	-27.28	-0.54	-13.00	-54.58
52.31	-75.24	-63.38	-11.22	-0.64	-13.00	-62.24
66.86	-78.00	-70.07	-7.14	-0.79	-13.00	-65.00
128.94	-77.83	-69.72	-7.12	-0.99	-13.00	-64.83
172.59	-77.22	-73.63	-2.33	-1.26	-13.00	-64.22
233.70	-77.11	-74.11	-1.55	-1.45	-13.00	-64.11
1697.60	-57.00	-63.07	10.00	-3.93	-13.00	-44.00
2546.40	-45.90	-51.93	10.89	-4.86	-13.00	-32.90

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**Test Frequency** 

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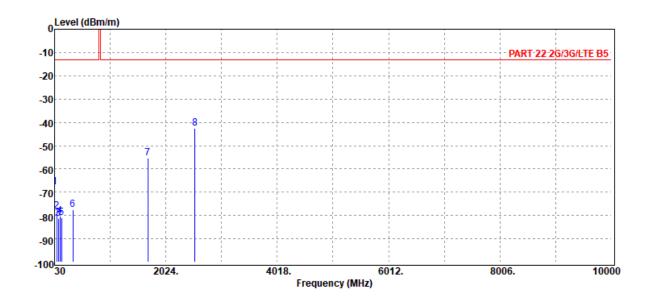
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 850 Temp./Humi. :22.6/66

Test Mode :Tx CH High Antenna Pol. :HORIZONTAL

**EUT Pol** :H Plane Engineer :Nick

:848.8 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-67.67	-39.85	-27.28	-0.54	-13.00	-54.67
66.86	-78.20	-70.27	-7.14	-0.79	-13.00	-65.20
94.99	-81.17	-72.37	-7.87	-0.93	-13.00	-68.17
127.00	-80.30	-72.04	-7.25	-1.01	-13.00	-67.30
153.19	-81.11	-75.39	-4.50	-1.22	-13.00	-68.11
359.80	-77.41	-74.00	-1.70	-1.71	-13.00	-64.41
1697.60	-55.42	-61.49	10.00	-3.93	-13.00	-42.42
2546.40	-42.69	-48.72	10.89	-4.86	-13.00	-29.69

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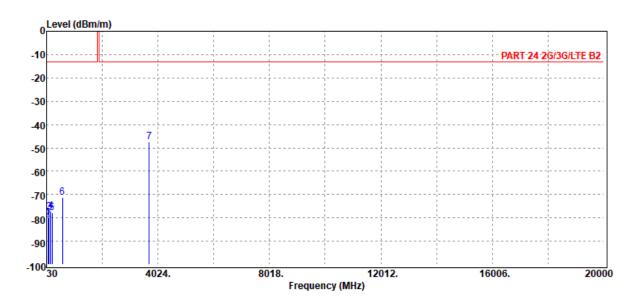
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 1900 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :VERTICAL :Tx CH Low

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :1850.2 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
73.65	-79.97	-72.43	-6.71	-0.83	-13.00	-66.97
86.26	-80.76	-73.22	-6.66	-0.88	-13.00	-67.76
128.94	-77.41	-69.30	-7.12	-0.99	-13.00	-64.41
175.50	-77.15	-73.87	-2.04	-1.24	-13.00	-64.15
231.76	-77.74	-74.83	-1.47	-1.44	-13.00	-64.74
602.30	-71.21	-68.33	-0.68	-2.20	-13.00	-58.21
3700.40	-47.43	-53.97	12.40	-5.86	-13.00	-34.43

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Report Number :ER-2020-40010

**Operation Mode** :GSM 1900

Test Mode :Tx CH Low

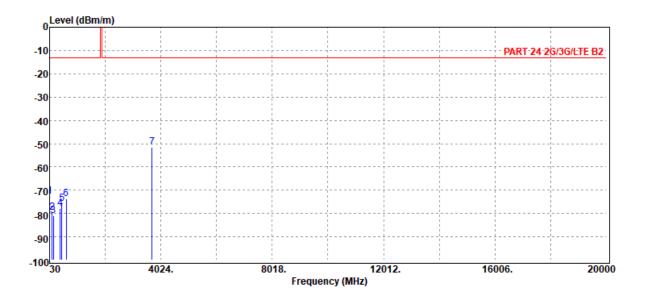
**EUT Pol** :H Plane

**Test Frequency** :1850.2 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
31.94	-72.83	-46.32	-25.96	-0.55	-13.00	-59.83
127.00	-79.56	-71.30	-7.25	-1.01	-13.00	-66.56
163.86	-81.01	-76.43	-3.35	-1.23	-13.00	-68.01
410.24	-77.73	-73.87	-1.98	-1.88	-13.00	-64.73
464.56	-75.82	-72.79	-1.09	-1.94	-13.00	-62.82
623.64	-73.71	-71.00	-0.56	-2.15	-13.00	-60.71
3700.40	-51.63	-58.17	12.40	-5.86	-13.00	-38.63

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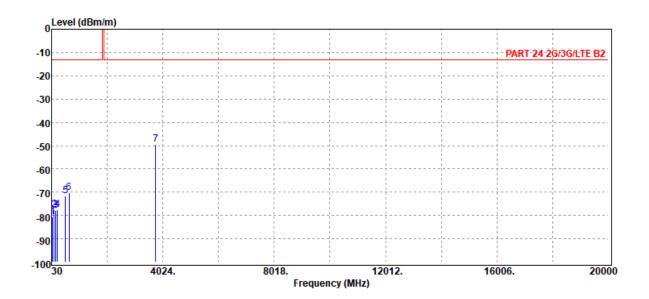
Report Number :ER-2020-40010 **Test Date** :2020-04-17

**Operation Mode** :GSM 1900 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :1880.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
69.77	-80.57	-72.96	-6.80	-0.81	-13.00	-67.57
128.94	-77.56	-69.45	-7.12	-0.99	-13.00	-64.56
177.44	-77.83	-74.69	-1.90	-1.24	-13.00	-64.83
238.55	-77.51	-74.28	-1.76	-1.47	-13.00	-64.51
524.70	-71.70	-68.87	-0.83	-2.00	-13.00	-58.70
657.59	-70.27	-67.26	-0.37	-2.64	-13.00	-57.27
3760.00	-49.40	-56.06	12.40	-5.74	-13.00	-36.40

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**Test Frequency** 

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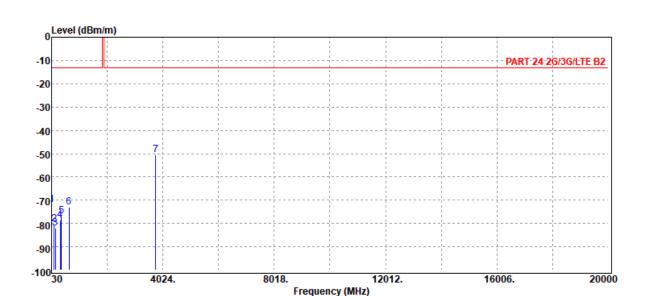
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 1900 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :HORIZONTAL

**EUT Pol** :H Plane Engineer :Nick

:1880.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-72.13	-44.31	-27.28	-0.54	-13.00	-59.13
127.00	-80.21	-71.95	-7.25	-1.01	-13.00	-67.21
167.74	-81.91	-77.79	-2.86	-1.26	-13.00	-68.91
342.34	-78.38	-75.19	-1.33	-1.86	-13.00	-65.38
379.20	-76.94	-73.91	-1.23	-1.80	-13.00	-63.94
660.50	-73.07	-70.04	-0.34	-2.69	-13.00	-60.07
3760.00	-50.43	-57.09	12.40	-5.74	-13.00	-37.43

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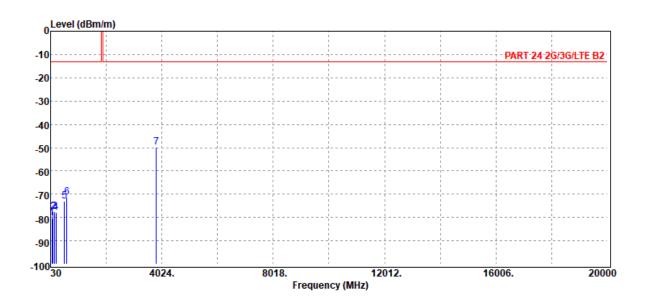
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :GSM 1900 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :VERTICAL :Tx CH High

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :1909.8 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
86.26	-80.30	-72.76	-6.66	-0.88	-13.00	-67.30
128.94	-77.51	-69.40	-7.12	-0.99	-13.00	-64.51
175.50	-77.51	-74.23	-2.04	-1.24	-13.00	-64.51
228.85	-77.78	-75.04	-1.32	-1.42	-13.00	-64.78
529.55	-73.16	-70.48	-0.84	-1.84	-13.00	-60.16
616.85	-71.33	-68.64	-0.66	-2.03	-13.00	-58.33
3819.60	-49.86	-56.47	12.40	-5.79	-13.00	-36.86

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Report Number :ER-2020-40010

**Operation Mode** :GSM 1900

Test Mode :Tx CH High

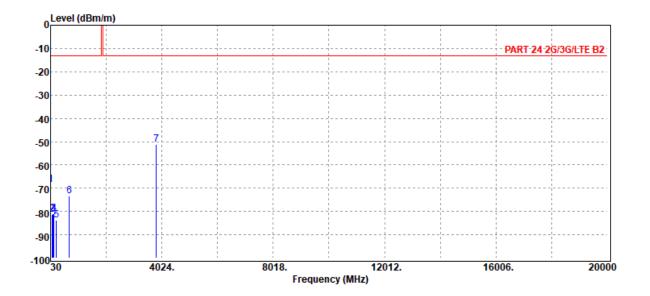
**EUT Pol** :H Plane

**Test Frequency** :1909.8 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
31.94	-68.35	-41.84	-25.96	-0.55	-13.00	-55.35
80.44	-81.35	-73.98	-6.52	-0.85	-13.00	-68.35
127.00	-80.87	-72.61	-7.25	-1.01	-13.00	-67.87
149.31	-80.97	-74.92	-4.84	-1.21	-13.00	-67.97
238.55	-83.67	-80.44	-1.76	-1.47	-13.00	-70.67
696.39	-73.44	-71.08	-0.20	-2.16	-13.00	-60.44
3819.60	-51.22	-57.83	12.40	-5.79	-13.00	-38.22

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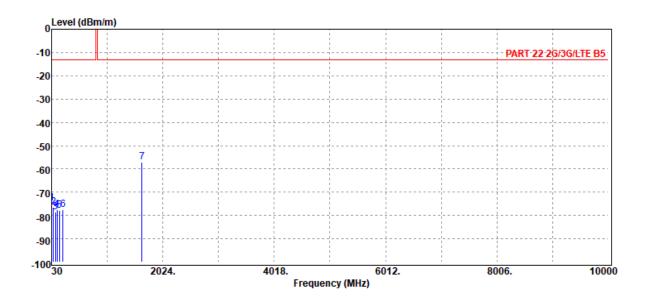
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :WCDMA B5 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :VERTICAL :Tx CH Low

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :826.4 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
36.79	-74.57	-52.01	-21.97	-0.59	-13.00	-61.57
65.89	-76.63	-68.49	-7.35	-0.79	-13.00	-63.63
94.99	-78.60	-69.80	-7.87	-0.93	-13.00	-65.60
128.94	-77.66	-69.55	-7.12	-0.99	-13.00	-64.66
167.74	-77.69	-73.57	-2.86	-1.26	-13.00	-64.69
233.70	-77.57	-74.57	-1.55	-1.45	-13.00	-64.57
1652.80	-57.09	-63.13	9.91	-3.87	-13.00	-44.09

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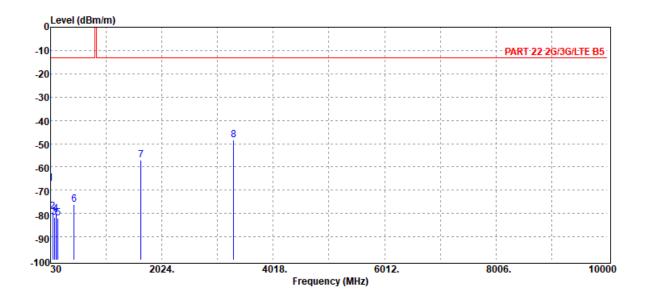
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :WCDMA B5 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :HORIZONTAL :Tx CH Low

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :826.4 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
00.00	07.00	00.40	07.00	0.54	40.00	54.00
30.00	-67.22	-39.40	-27.28	-0.54	-13.00	-54.22
66.86	-79.21	-71.28	-7.14	-0.79	-13.00	-66.21
94.99	-81.59	-72.79	-7.87	-0.93	-13.00	-68.59
127.00	-80.24	-71.98	-7.25	-1.01	-13.00	-67.24
160.95	-82.00	-77.10	-3.69	-1.21	-13.00	-69.00
453.89	-76.28	-73.38	-1.07	-1.83	-13.00	-63.28
1652.80	-57.05	-63.09	9.91	-3.87	-13.00	-44.05
3305.60	-48.56	-54.79	12.43	-6.20	-13.00	-35.56

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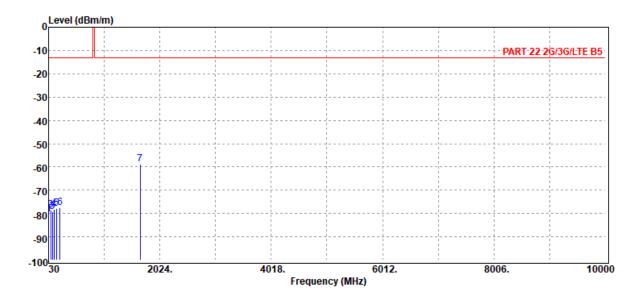
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :WCDMA B5 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :VERTICAL :Tx CH Mid

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :836.6 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-80.23	-52.41	-27.28	-0.54	-13.00	-67.23
68.80	-78.54	-70.66	-7.07	-0.81	-13.00	-65.54
94.99	-79.30	-70.50	-7.87	-0.93	-13.00	-66.30
128.94	-78.16	-70.05	-7.12	-0.99	-13.00	-65.16
172.59	-77.80	-74.21	-2.33	-1.26	-13.00	-64.80
235.64	-77.63	-74.54	-1.63	-1.46	-13.00	-64.63
1673.20	-58.90	-64.95	9.95	-3.90	-13.00	-45.90

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**Test Frequency** 

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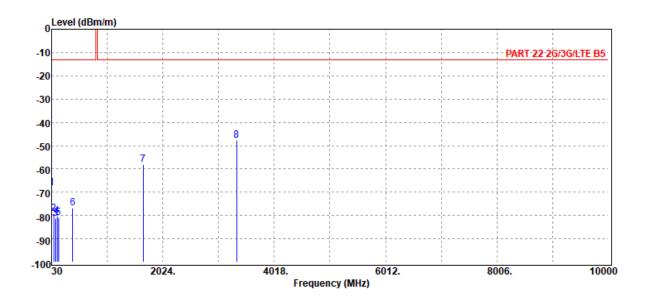
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :WCDMA B5 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :HORIZONTAL :Tx CH Mid

**EUT Pol** :H Plane Engineer :Nick

:836.6 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-68,22	-40.40	-27.28	-0.54	-13.00	-55.22
68.80	-79.30	-71.42	-7.07	-0.81	-13.00	-66.30
94.99	-81.23	-72.43	-7.87	-0.93	-13.00	-68.23
128.94	-80.24	-72.13	-7.12	-0.99	-13.00	-67.24
153.19	-80.96	-75.24	-4.50	-1.22	-13.00	-67.96
408.30	-76.96	-73.22	-1.87	-1.87	-13.00	-63.96
1673.20	-58.22	-64.27	9.95	-3.90	-13.00	-45.22
3346.40	-47.71	-54.74	12.68	-5.65	-13.00	-34.71

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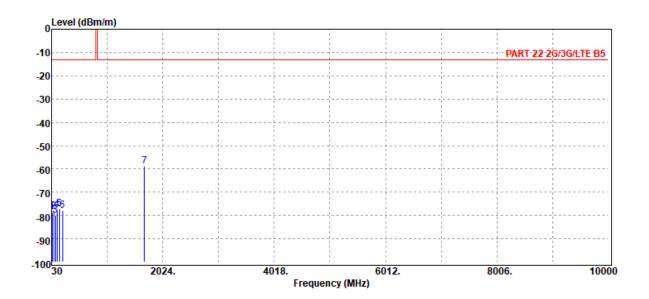
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :WCDMA B5 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :VERTICAL :Tx CH High

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :846.6 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
37.76	-78.43	-56.83	-21.00	-0.60	-13.00	-65.43
68.80	-78.13	-70.25	-7.07	-0.81	-13.00	-65.13
94.99	-79.96	-71.16	-7.87	-0.93	-13.00	-66.96
128.94	-77.60	-69.49	-7.12	-0.99	-13.00	-64.60
172.59	-77.11	-73.52	-2.33	-1.26	-13.00	-64.11
230.79	-77.81	-74.95	-1.43	-1.43	-13.00	-64.81
1693.20	-58.99	-65.06	9.99	-3.92	-13.00	-45.99

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**Test Frequency** 

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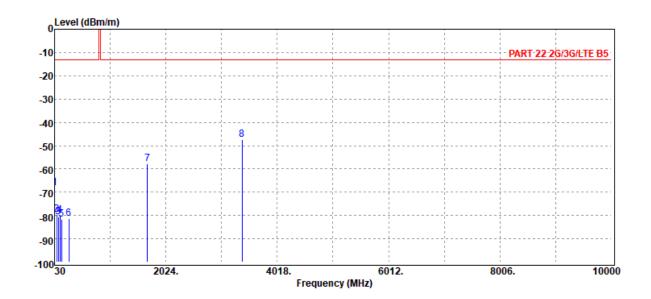
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :WCDMA B5 Temp./Humi. :22.6/66

Test Mode Antenna Pol. :HORIZONTAL :Tx CH High

**EUT Pol** :H Plane Engineer :Nick

:846.6 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
		Output Level	Gain	Loss		
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-68.05	-40.23	-27.28	-0.54	-13.00	-55.05
66.86	-79.54	-71.61	-7.14	-0.79	-13.00	-66.54
94.99	-80.78	-71.98	-7.87	-0.93	-13.00	-67.78
127.00	-79.99	-71.73	-7.25	-1.01	-13.00	-66.99
157.07	-81.81	-76.59	-4.01	-1.21	-13.00	-68.81
288.99	-81.21	-78.11	-1.49	-1.61	-13.00	-68.21
1693.20	-57.95	-64.02	9.99	-3.92	-13.00	-44.95
3386.40	-47.57	-55.16	12.70	-5.11	-13.00	-34.57

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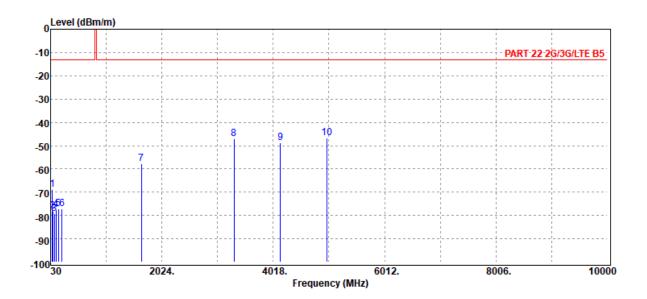
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B5 Temp./Humi. :22.6/66

Test Mode :Tx CH Low Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :829.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
61.04	-68.86	-59.80	-8.31	-0.75	-13.00	-55.86
68.80	-78.13	-70.25	-7.07	-0.81	-13.00	-65.13
94.99	-79.25	-70.45	-7.87	-0.93	-13.00	-66.25
128.94	-77.44	-69.33	-7.12	-0.99	-13.00	-64.44
172.59	-77.32	-73.73	-2.33	-1.26	-13.00	-64.32
233.70	-77.08	-74.08	-1.55	-1.45	-13.00	-64.08
1658.00	-57.84	-63.88	9.92	-3.88	-13.00	-44.84
3316.00	-47.13	-53.57	12.50	-6.06	-13.00	-34.13
4145.00	-48.91	-55.57	12.80	-6.14	-13.00	-35.91
4974.00	-46.83	-52.69	12.70	-6.84	-13.00	-33.83

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Report Number :ER-2020-40010

**Operation Mode** :LTE B5

Test Mode :Tx CH Low

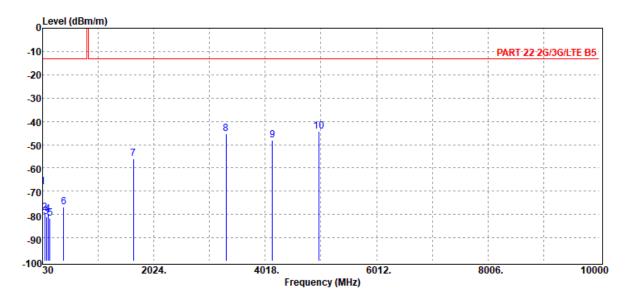
**EUT Pol** :H Plane

**Test Frequency** :829.0 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-68.22	-40.40	-27.28	-0.54	-13.00	-55.22
68.80	-79.36	-71.48	-7.07	-0.81	-13.00	-66.36
94.99	-81.13	-72.33	-7.87	-0.93	-13.00	-68.13
127.00	-79.91	-71.65	-7.25	-1.01	-13.00	-66.91
162.89	-81.62	-76.91	-3.49	-1.22	-13.00	-68.62
408.30	-76.75	-73.01	-1.87	-1.87	-13.00	-63.75
1658.00	-55.91	-61.95	9.92	-3.88	-13.00	-42.91
3316.00	-45.28	-51.72	12.50	-6.06	-13.00	-32.28
4145.00	-48.03	-54.69	12.80	-6.14	-13.00	-35.03
4974.00	-44.37	-50.23	12.70	-6.84	-13.00	-31.37

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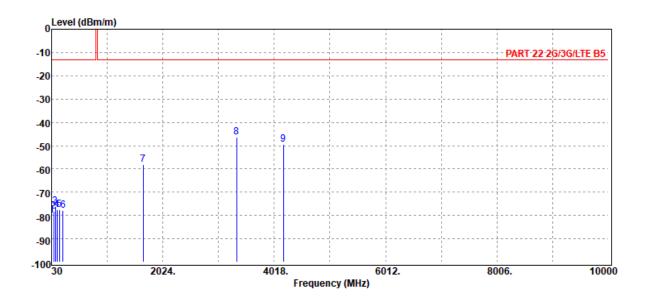
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B5 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :836.5 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
MHz	dBm	Output Level dBm	Gain dBi/dBd	Loss dB	dBm	dB
30.00	-79.89	-52.07	-27.28	-0.54	-13.00	-66.89
68.80	-78.21	-70.33	-7.07	-0.81	-13.00	-65.21
95.96	-76.12	-67.12	-8.07	-0.93	-13.00	-63.12
128.94	-77.63	-69.52	-7.12	-0.99	-13.00	-64.63
173.56	-77.35	-73.86	-2.24	-1.25	-13.00	-64.35
233.70	-77.73	-74.73	-1.55	-1.45	-13.00	-64.73
1673.00	-58.12	-64.17	9.95	-3.90	-13.00	-45.12
3346.00	-46.50	-53.53	12.68	-5.65	-13.00	-33.50
4182.50	-49.34	-55.80	12.80	-6.34	-13.00	-36.34

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Report Number :ER-2020-40010

**Operation Mode** :LTE B5

Test Mode :Tx CH Mid

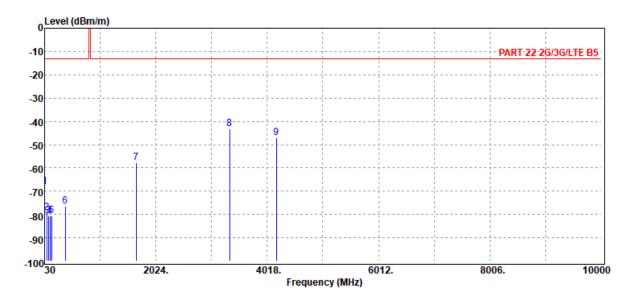
**EUT Pol** :H Plane

**Test Frequency** :836.5 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-68.08	-40.26	-27.28	-0.54	-13.00	-55.08
66.86	-79.31	-71.38	-7.14	-0.79	-13.00	-66.31
94.99	-80.64	-71.84	-7.87	-0.93	-13.00	-67.64
127.00	-80.77	-72.51	-7.25	-1.01	-13.00	-67.77
154.16	-80.71	-75.12	-4.37	-1.22	-13.00	-67.71
403.45	-76.64	-73.12	-1.65	-1.87	-13.00	-63.64
1673.00	-57.75	-63.80	9.95	-3.90	-13.00	-44.75
3346.00	-43.30	-50.33	12.68	-5.65	-13.00	-30.30
4182.50	-47.02	-53.48	12.80	-6.34	-13.00	-34.02

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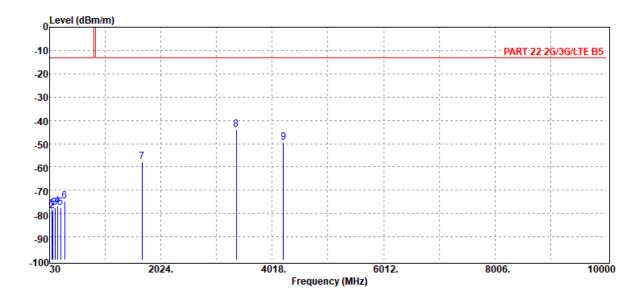
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B5 Temp./Humi. :22.6/66

Test Mode :Tx CH High Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :844.0 MHz



Freq.	EIRP/ERP	SG	Antenna	Cable	Limit	Margin
MHz	dBm	Output Level dBm	Gain dBi/dBd	Loss dB	dBm	dB
68.80	-77.97	-70.09	-7.07	-0.81	-13.00	-64.97
83.35	-78.92	-71.57	-6.48	-0.87	-13.00	-65.92
128.94	-77.57	-69.46	-7.12	-0.99	-13.00	-64.57
172.59	-76.75	-73.16	-2.33	-1.26	-13.00	-63.75
225.94	-77.66	-75.12	-1.14	-1.40	-13.00	-64.66
299.66	-74.82	-71.81	-1.39	-1.62	-13.00	-61.82
1688.00	-57.85	-63.91	9.98	-3.92	-13.00	-44.85
3376.00	-43.86	-51.31	12.70	-5.25	-13.00	-30.86
4220.00	-49.60	-56.02	12.80	-6.38	-13.00	-36.60

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Report Number :ER-2020-40010

**Operation Mode** :LTE B5

Test Mode :Tx CH High

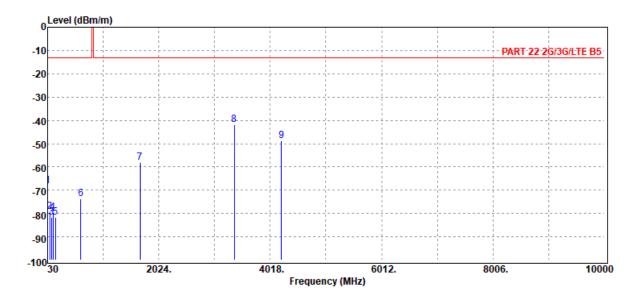
**EUT Pol** :H Plane

**Test Frequency** :844.0 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-68.31	-40.49	-27.28	-0.54	-13.00	-55.31
66.86	-79.32	-71.39	-7.14	-0.79	-13.00	-66.32
94.99	-81.54	-72.74	-7.87	-0.93	-13.00	-68.54
125.06	-79.46	-71.15	-7.29	-1.02	-13.00	-66.46
172.59	-81.52	-77.93	-2.33	-1.26	-13.00	-68.52
621.70	-73.81	-71.09	-0.62	-2.10	-13.00	-60.81
1688.00	-58.00	-64.06	9.98	-3.92	-13.00	-45.00
3376.00	-41.76	-49.21	12.70	-5.25	-13.00	-28.76
4220.00	-48.68	-55.10	12.80	-6.38	-13.00	-35.68

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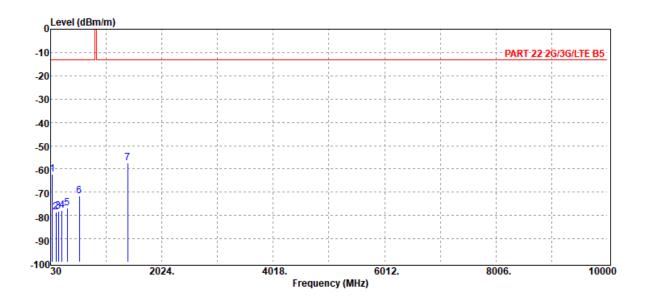
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B12 Temp./Humi. :22.6/66

Test Mode :Tx CH Low Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :704.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
61.04	-62.26	-53.20	-8.31	-0.75	-13.00	-49.26
128.94	-78.53	-70.42	-7.12	-0.99	-13.00	-65.53
172.59	-78.13	-74.54	-2.33	-1.26	-13.00	-65.13
233.70	-77.73	-74.73	-1.55	-1.45	-13.00	-64.73
332.64	-76.82	-73.89	-1.19	-1.74	-13.00	-63.82
548.95	-71.69	-68.48	-1.04	-2.17	-13.00	-58.69
1408.00	-57.33	-61.70	7.95	-3.58	-13.00	-44.33

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Report Number :ER-2020-40010

**Operation Mode** :LTE B12

Test Mode :Tx CH Low

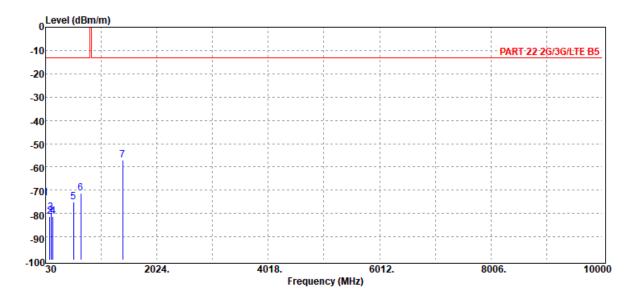
**EUT Pol** :H Plane

**Test Frequency** :704.0 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-73.39	-45.57	-27.28	-0.54	-13.00	-60.39
105.66	-81.24	-72.01	-8.25	-0.98	-13.00	-68.24
125.06	-79.63	-71.32	-7.29	-1.02	-13.00	-66.63
160.95	-81.35	-76.45	-3.69	-1.21	-13.00	-68.35
534.40	-75.04	-72.22	-0.95	-1.87	-13.00	-62.04
659.53	-71.40	-68.38	-0.34	-2.68	-13.00	-58.40
1408.00	-57.10	-61.47	7.95	-3.58	-13.00	-44.10

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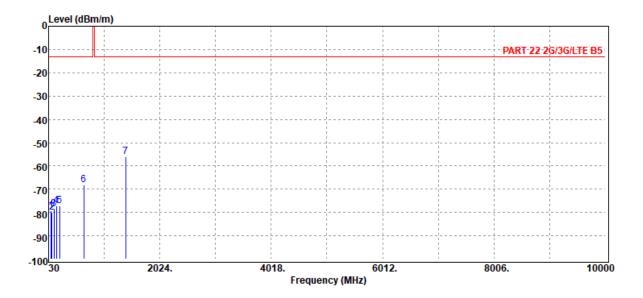
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B12 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :707.5 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
73.65	-79.21	-71.67	-6.71	-0.83	-13.00	-66.21
90.14	-79.81	-71.67	-7.24	-0.90	-13.00	-66.81
128.94	-78.43	-70.32	-7.12	-0.99	-13.00	-65.43
170.65	-77.16	-73.31	-2.58	-1.27	-13.00	-64.16
231.76	-77.30	-74.39	-1.47	-1.44	-13.00	-64.30
659.53	-68.24	-65.22	-0.34	-2.68	-13.00	-55.24
1415.00	-56.16	-60.56	7.99	-3.59	-13.00	-43.16

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Report Number :ER-2020-40010

**Operation Mode** :LTE B12

Test Mode :Tx CH Mid

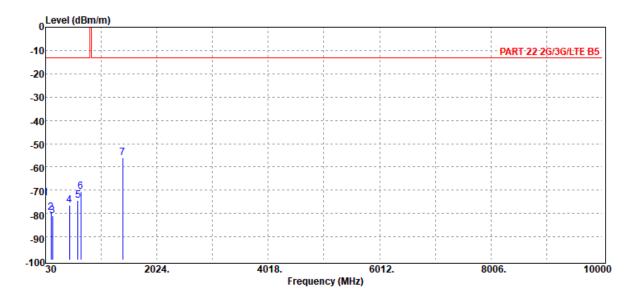
**EUT Pol** :H Plane

**Test Frequency** :707.5 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-73.25	-45.43	-27.28	-0.54	-13.00	-60.25
127.00	-79.65	-71.39	-7.25	-1.01	-13.00	-66.65
156.10	-80.88	-75.43	-4.24	-1.21	-13.00	-67.88
461.65	-76.52	-73.48	-1.14	-1.90	-13.00	-63.52
609.09	-74.33	-71.71	-0.63	-1.99	-13.00	-61.33
658.56	-70.65	-67.64	-0.35	-2.66	-13.00	-57.65
1415.00	-56.17	-60.57	7.99	-3.59	-13.00	-43.17

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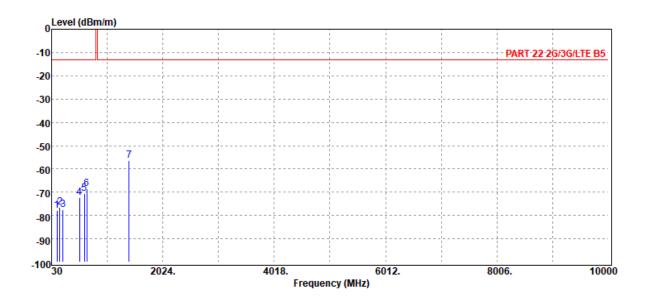
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B12 Temp./Humi. :22.6/66

Test Mode :Tx CH High Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :711.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
128.94	-78.00	-69.89	-7.12	-0.99	-13.00	-65.00
175.50	-76.40	-73.12	-2.04	-1.24	-13.00	-63.40
233.70	-77.57	-74.57	-1.55	-1.45	-13.00	-64.57
531.49	-72.17	-69.45	-0.88	-1.84	-13.00	-59.17
618.79	-70.59	-67.88	-0.67	-2.04	-13.00	-57.59
659.53	-68.50	-65.48	-0.34	-2.68	-13.00	-55.50
1422.00	-56.57	-61.01	8.03	-3.59	-13.00	-43.57

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Report Number :ER-2020-40010

**Operation Mode** :LTE B12

Test Mode :Tx CH High

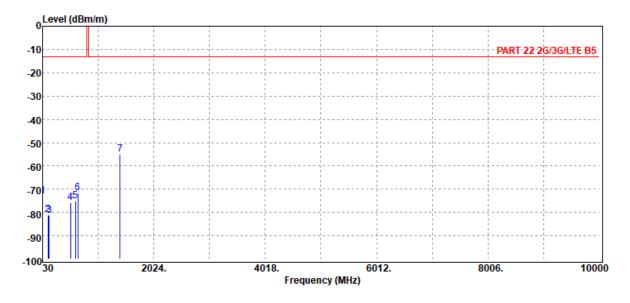
**EUT Pol** :H Plane

**Test Frequency** :711.0 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-73.16	-45.34	-27.28	-0.54	-13.00	-60.16
125.06	-81.03	-72.72	-7.29	-1.02	-13.00	-68.03
149.31	-81.46	-75.41	-4.84	-1.21	-13.00	-68.46
529.55	-75.69	-73.01	-0.84	-1.84	-13.00	-62.69
614.91	-75.00	-72.34	-0.65	-2.01	-13.00	-62.00
659.53	-71.72	-68.70	-0.34	-2.68	-13.00	-58.72
1422.00	-55.03	-59.47	8.03	-3.59	-13.00	-42.03

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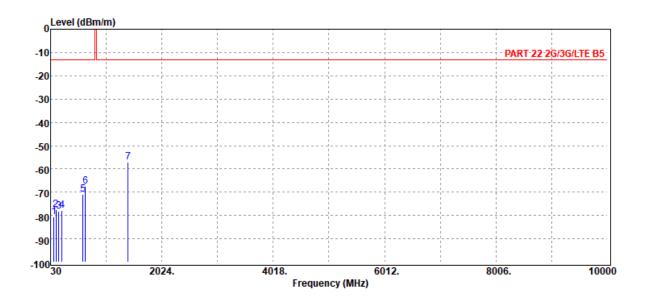
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B17 Temp./Humi. :22.6/66

Test Mode :Tx CH Low Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :709.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
91.11	-80.53	-72.35	-7.27	-0.91	-13.00	-67.53
128.94	-77.39	-69.28	-7.12	-0.99	-13.00	-64.39
175.50	-78.05	-74.77	-2.04	-1.24	-13.00	-65.05
238.55	-77.82	-74.59	-1.76	-1.47	-13.00	-64.82
613.94	-70.94	-68.30	-0.64	-2.00	-13.00	-57.94
655.65	-67.35	-64.36	-0.39	-2.60	-13.00	-54.35
1418.00	-56.99	-61.41	8.01	-3.59	-13.00	-43.99

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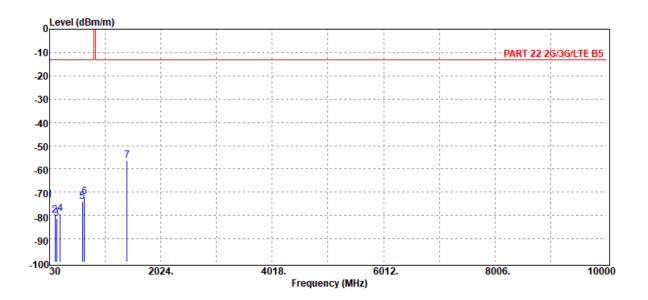
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B17 Temp./Humi. :22.6/66

Test Mode :Tx CH Low Antenna Pol. :HORIZONTAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :709.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-73.50	-45.68	-27.28	-0.54	-13.00	-60.50
125.06	-79.89	-71.58	-7.29	-1.02	-13.00	-66.89
154.16	-81.28	-75.69	-4.37	-1.22	-13.00	-68.28
219.15	-79.40	-77.06	-0.98	-1.36	-13.00	-66.40
614.91	-74.10	-71.44	-0.65	-2.01	-13.00	-61.10
655.65	-71.80	-68.81	-0.39	-2.60	-13.00	-58.80
1418.00	-56.43	-60.85	8.01	-3.59	-13.00	-43.43

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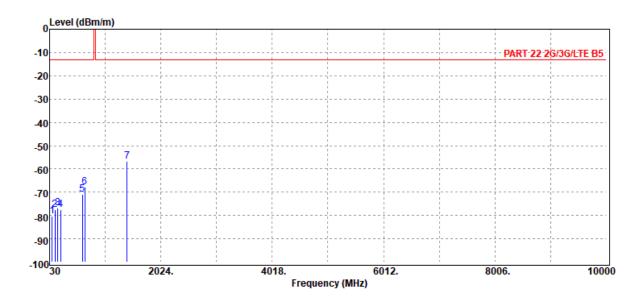
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B17 Temp./Humi. :22.6/66

Test Mode :Tx CH Mid Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :710.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
76.56	-80.24	-72.80	-6.60	-0.84	-13.00	-67.24
128.94	-77.61	-69.50	-7.12	-0.99	-13.00	-64.61
178.41	-76.92	-73.89	-1.80	-1.23	-13.00	-63.92
230.79	-77.35	-74.49	-1.43	-1.43	-13.00	-64.35
619.76	-70.76	-68.03	-0.68	-2.05	-13.00	-57.76
658.56	-67.75	-64.74	-0.35	-2.66	-13.00	-54.75
1420.00	-56.74	-61.17	8.02	-3.59	-13.00	-43.74

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Report Number :ER-2020-40010

**Operation Mode** :LTE B17

Test Mode :Tx CH Mid

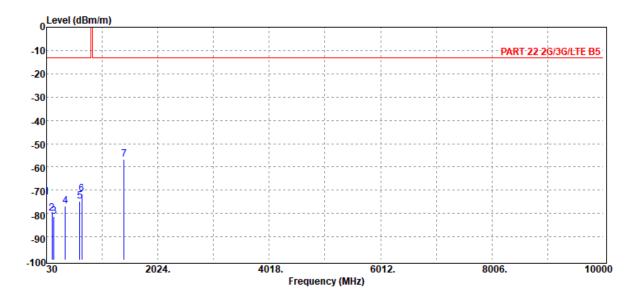
**EUT Pol** :H Plane

**Test Frequency** :710.0 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
31.94	-72.93	-46.42	-25.96	-0.55	-13.00	-59.93
128.94	-80.08	-71.97	-7.12	-0.99	-13.00	-67.08
162.89	-81.43	-76.72	-3.49	-1.22	-13.00	-68.43
366.59	-76.74	-73.50	-1.51	-1.73	-13.00	-63.74
624.61	-74.77	-72.07	-0.52	-2.18	-13.00	-61.77
659.53	-71.70	-68.68	-0.34	-2.68	-13.00	-58.70
1420.00	-56.70	-61.13	8.02	-3.59	-13.00	-43.70

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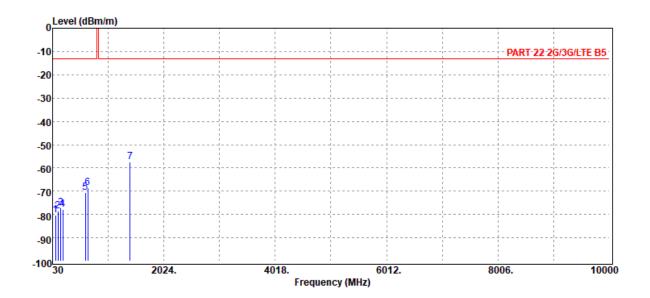
Report Number **Test Date** :2020-04-17 :ER-2020-40010

**Operation Mode** :LTE B17 Temp./Humi. :22.6/66

Test Mode :Tx CH High Antenna Pol. :VERTICAL

**EUT Pol** :H Plane Engineer :Nick

**Test Frequency** :711.0 MHz



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
83.35	-80.24	-72.89	-6.48	-0.87	-13.00	-67.24
128.94	-78.40	-70.29	-7.12	-0.99	-13.00	-65.40
177.44	-77.11	-73.97	-1.90	-1.24	-13.00	-64.11
216.24	-77.85	-75.50	-0.98	-1.37	-13.00	-64.85
618.79	-70.66	-67.95	-0.67	-2.04	-13.00	-57.66
660.50	-68.55	-65.52	-0.34	-2.69	-13.00	-55.55
1422.00	-57.31	-61.75	8.03	-3.59	-13.00	-44.31

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Report Number :ER-2020-40010

**Operation Mode** :LTE B17

Test Mode :Tx CH High

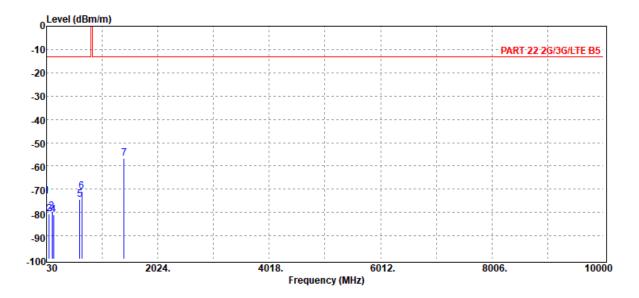
**EUT Pol** :H Plane

**Test Frequency** :711.0 MHz **Test Date** :2020-04-17

Temp./Humi. :22.6/66

Antenna Pol. :HORIZONTAL

Engineer :Nick



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-72.94	-45.12	-27.28	-0.54	-13.00	-59.94
73.65	-80.75	-73.21	-6.71	-0.83	-13.00	-67.75
128.94	-79.53	-71.42	-7.12	-0.99	-13.00	-66.53
153.19	-80.91	-75.19	-4.50	-1.22	-13.00	-67.91
626.55	-74.29	-71.54	-0.52	-2.23	-13.00	-61.29
660.50	-70.99	-67.96	-0.34	-2.69	-13.00	-57.99
1422.00	-56.64	-61.08	8.03	-3.59	-13.00	-43.64

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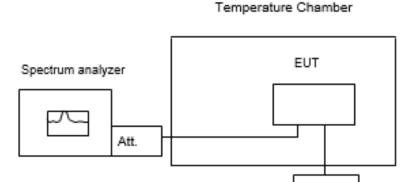
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#### 10 FREQUENCY STABILITY MEASUREMENT

# 10.1 Standard Applicabl

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

## 10.2 Test Set-up



Variable DC Power Supply

**Note:** Measurement setup for testing on Antenna connector

#### 10.3 **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°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint as declared by the manufacturer, record the maximum frequency change.

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# 10.4 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site							
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.		
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54200716	Apr. 1st, 2020	Mar. 31st, 2021		
Radio Communication Analyer	Anritsu	MT8820C	6200995019	Apr. 1st, 2020	Mar. 31st, 2021		
DC Power Supply	Agilent	E3640A	MY40000811	Dec. 23th, 2019	Dec. 22nd, 2020		
Radio Communication Analyer	Anritsu	MT8815B	6200711454	Apr. 1st, 2020	Mar. 31st, 2021		
Attenuator	Mini-Circuit	BW-S10W2 +	2	Jan. 2nd, 2020	Jan. 1st, 2021		
Splitter	RF-LAMBAD	RFLT2W1G 18G	11-JSPF412- 018	Jan. 2nd, 2020	Jan. 1st, 2021		
Coaxial Cable	Huber Suhner	SUCOFLEX 102EPA	MY2616/2	Jan. 2nd, 2020	Jan. 1st, 2021		

#### 10.5 **Measurement Result**

Note: The battery is rated 3.8Vdc.

	GPRS 850 Mid Channel 836.6 MHz							
	Limit: +/- 2.5 ppm							
Vdc	Temp. ( $^{\circ}$ C)	Freq. (MHz)	Delta (Hz)	Limit (Hz)				
	FREQUEN	ICY ERROR vs. '	VOLTAGE					
4.29	20	836.600005	5	2091				
3.8	20	836.599992	-8	2091				
3.51	20	836.600011	11	2091				
2.8 (End point)	20	836.600002	2	2091				
	FREQU	ENCY ERROR vs	s. Temp.					
3.8	50	836.599985	-15	2091				
3.8	40	836.599998	-2	2091				
3.8	30	836.599993	-7	2091				
3.8	20	836.599999	-1	2091				
3.8	10	836.600017	17	2091				
3.8	0	836.600005	5	2091				
3.8	-10	836.599996	-4	2091				
3.8	-20	836.600009	9	2091				
3.8	-30	836.599995	-5	2091				

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	GPRS 1900 Mid Channel 1880 MHz							
	Limit: +/- 2.5 ppm							
Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit (Hz)				
	FREQUE	ICY ERROR vs. '	VOLTAGE					
4.29	20	1880.000003	3	4700				
3.8	20	1880.000009	9	4700				
3.51	20	1880.000015	15	4700				
2.8 (End point)	20	1879.999986	-14	4700				
	FREQU	ENCY ERROR vs	s. Temp.					
3.8	50	1879.999992	-8	4700				
3.8	40	1880.000017	17	4700				
3.8	30	1879.999999	-1	4700				
3.8	20	1880.000007	7	4700				
3.8	10	1879.999995	-5	4700				
3.8	0	1880.000012	12	4700				
3.8	-10	1879.999994	-6	4700				
3.8	-20	1879.999992	-8	4700				
3.8	-30	1880.000003	3	4700				

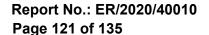
	WCDMA V Mid Channel 836.6 MHz							
	Limit: +/- 2.5 ppm							
Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit (Hz)				
	FREQUE	NCY ERROR vs. \	VOLTAGE					
4.29	20	836.599999	-1	2091				
3.8	20	836.600003	3	2091				
3.51	20	836.599992	-8	2091				
2.8 (End point)	20	836.600011	11	2091				
	FREQU	ENCY ERROR vs	s. Temp.					
3.8	50	836.599995	-5	2091				
3.8	40	836.599991	-9	2091				
3.8	30	836.599993	-7	2091				
3.8	20	836.600004	4	2091				
3.8	10	836.599984	-16	2091				
3.8	0	836.600005	5	2091				
3.8	-10	836.600008	8	2091				
3.8	-20	836.600003	3	2091				
3.8	-30	836.599994	-6	2091				

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Reference Freq.:		B5 Mid annel	836.5	MHz 10M QPSK CH 20525				
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)				
	Freq.	ERROR vs. V	OLTAGE					
4.29	25	836.500011	11	2091				
3.8	25	836.499994	-6	2091				
3.51	25	836.500013	13	2091				
2.8 (End Point)	25	836.499990	-10	2091				
	Freq. ERROR vs. Temp.							
3.8	-30	836.500004	4	2091				
3.8	-20	836.499992	-8	2091				
3.8	-10	836.499987	-13	2091				
3.8	0	836.500005	5	2091				
3.8	10	836.499988	-12	2091				
3.8	20	836.500017	17	2091				
3.8	30	836.500006	6	2091				
3.8	40	836.500002	2	2091				
3.8	50	836.500007	7	2091				

Reference Freq.:		B12 Mid annel	707.5	MHz 10M QPSK CH 23095
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
	Freq.	ERROR vs. V	OLTAGE	
4.29	25	707.499994	-6	1769
3.8	25	707.499999	-1	1769
3.51	25	707.500009	9	1769
2.8 (End Point)	25	707.500015	15	1769
	Fre	q. ERROR vs.	Temp.	
3.8	-30	707.500001	1	1769
3.8	-20	707.500008	8	1769
3.8	-10	707.500017	17	1769
3.8	0	707.499982	-18	1769
3.8	10	707.499999	-1	1769
3.8	20	707.499991	-9	1769
3.8	30	707.499995	-5	1769
3.8	40	707.500003	3	1769
3.8	50	707.500007	7	1769

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Reference Freq.:		B17 Mid annel	710	MHz 10M QPSK CH 23790
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
	Freq.	ERROR vs. V	OLTAGE	
4.29	25	710.000002	2	1775
3.8	25	709.999992	-8	1775
3.51	25	710.000009	9	1775
2.8 (End Point)	25	709.999989	-11	1775
	Fred	ą. ERROR vs.	Temp.	
3.8	-30	709.999994	-6	1775
3.8	-20	710.000002	2	1775
3.8	-10	710.000009	9	1775
3.8	0	709.999993	-7	1775
3.8	10	709.999989	-11	1775
3.8	20	709.999984	-16	1775
3.8	30	710.000001	1	1775
3.8	40	710.000006	6	1775
3.8	50	709.999991	-9	1775

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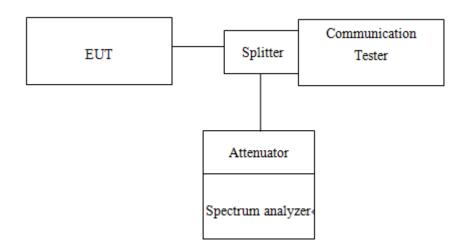
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#### **PEAK TO AVERAGE RATIO** 11

# 11.1 Standard Applicable

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

## 11.2 Test SET-UP



#### 11.3 **Measurement Procedure**

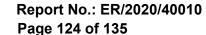
- 1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
- 2. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth; & internal =1ms
- 3. Set the number of counts to a value that stabilizes the measured CCDF curve.

# **Measurement Equipment Used**

Condu	Conducted Emission (measured at antenna port) Test Site									
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.					
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54200716	Apr. 1st, 2020	Mar. 31st, 2021					
Radio Communication Analyer	Anritsu	MT8820C	6200995019	Apr. 1st, 2020	Mar. 31st, 2021					
DC Power Supply	Agilent	E3640A	MY40000811	Dec. 23th, 2019	Dec. 22nd, 2020					
Radio Communication Analyer	Anritsu	MT8815B	6200711454	Apr. 1st, 2020	Mar. 31st, 2021					
Attenuator	Mini-Circuit	BW-S10W2 +	2	Jan. 2nd, 2020	Jan. 1st, 2021					
Splitter	RF-LAMBAD	RFLT2W1G 18G	11-JSPF412- 018	Jan. 2nd, 2020	Jan. 1st, 2021					
Coaxial Cable	Huber Suhner	SUCOFLEX 102EPA	MY2616/2	Jan. 2nd, 2020	Jan. 1st, 2021					

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#### 11.5 **Measurement Result**

Freq.		Peak-to-	Average
(MHz)	СН	GSM	GPRS
(IVII IZ)		850	850
824.2	128	10.38	10.34
836.6	190	9.64	10.12
848.8	251	9.92	10.4
Erog		Peak-to-	Average
Freq.	СН	Peak-to- GSM	Average GPRS
Freq. (MHz)	СН		
	<b>CH</b> 512	GSM	GPRS
(MHz)		GSM 1900	GPRS 1900

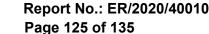
Eroa		Peak-to	-Average Ra	atio (dB)
Freq. (MHz)	CH	WCDMA	HSDPA	HSUPA
(IVITIZ)		V	V	V
826.4	4132	3.05	3.99	3.97
836.6	4183	2.92	3.59	3.86
846.6	4233	3.09	3.82	3.95

LTE BAND 5									
Channel bandwidth: 1.4MHz Channel bandwidth: 3MHz							lHz		
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR	(dB)		
(MHz)	СП	16QAM	Limit	(MHz)	СН	16QAM	Limit		
824.7	20407	5.99	13	825.5	20415	6.14	13		
836.5	20525	6.19	13	836.5	20525	6.25	13		
848.3	20643	6.27	13	847.5	20635	6.26	13		

LTE BAND 5									
Char	nnel band	lwidth: 5M	lHz	Chan	nel band	width: 10N	ИHz		
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR	(dB)		
(MHz)	СП	16QAM	Limit	(MHz)	СП	16QAM	Limit		
826.5	20425	5.99	13	829.0	20450	6.17	13		
836.5	20525	6.13	13	836.5	20525	6.15	13		
846.5	20625	6.19	13	844.0	20600	6.03	13		

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LTE BAND 12									
Channel bandwidth: 1.4MHz Channel bandwidth: 3MHz									
Freq.	СН	PAPR	PAPR (dB) Freq.		СН	PAPR	(dB)		
(MHz)	СП	16QAM	Limit	(MHz)	СН	16QAM	Limit		
699.7	23017	6.45	13	700.5	23025	6.29	13		
707.5	23095	6.29	13	707.5	23095	6.41	13		
715.3	23173	6.22	13	714.5	23165	6.30	13		

LTE BAND 12									
Channel bandwidth: 5MHz Channel bandwidth: 10MH							ИHz		
Freq.	СН	PAPR	PR (dB) Freq.			PAPR (dB)			
(MHz)	СП	16QAM	Limit	(MHz)	СН	16QAM	Limit		
701.5	23035	6.13	13	704.0	23060	6.30	13		
707.5	23095	6.28	13	707.5	23095	6.32	13		
713.5	23155	6.13	13	711.0	23130	6.15	13		

LTE BAND 17									
Chan	nel bandı	width: 1.4N	ИHz	Chai	nnel band	lwidth: 3M	lHz		
Freq.	СН	PAPR	APR (dB) Freq.			PAPR (dB)			
(MHz)	СП	16QAM	Limit	(MHz)	СН	16QAM	Limit		
706.5	23755	6.71	13	709.0	23780	6.13	13		
710.0	23790	6.19	13	710.0	23790	6.20	13		
713.5	23825	6.25	13	711.0	23800	6.15	13		

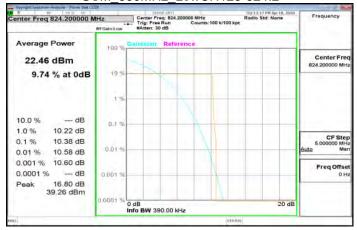
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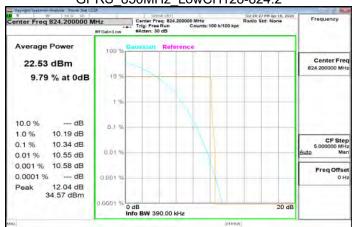


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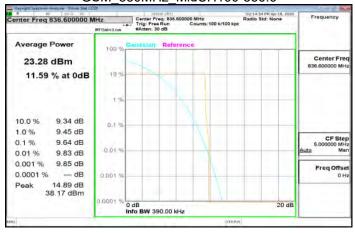
### GSM 850MHz LowCH128-824.2



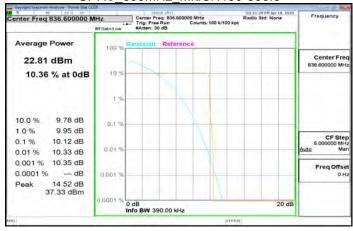
# GPRS 850MHz\_LowCH128-824.2



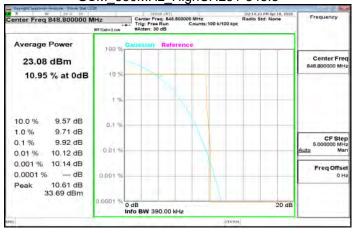
## GSM 850MHz MidCH190-836.6



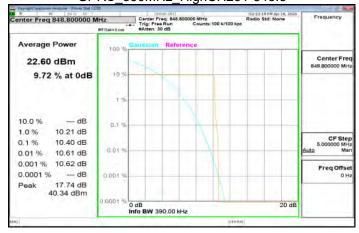
### GPRS 850MHz MidCH190-836.6



# GSM\_850MHz\_HighCH251-848.8



GPRS\_850MHz\_HighCH251-848.8



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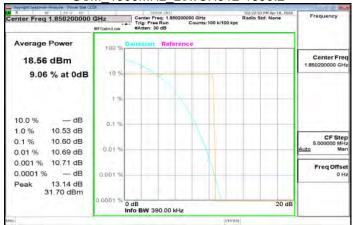
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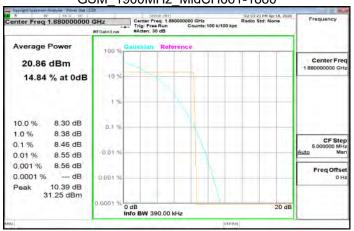
### GSM 1900MHz LowCH512-1850.2



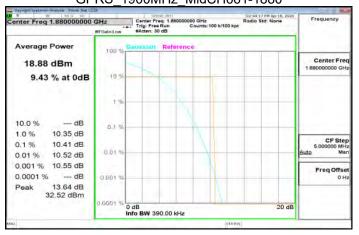
### GPRS 1900MHz LowCH512-1850.2



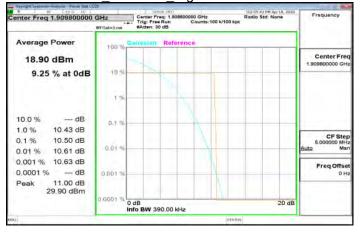
## GSM 1900MHz MidCH661-1880



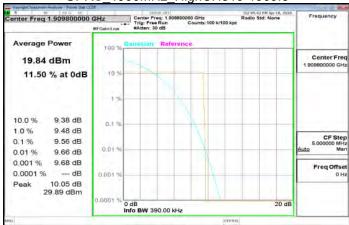
## GPRS 1900MHz MidCH661-1880



### GSM 1900MHz HighCH810-1909.8



# GPRS\_1900MHz\_HighCH810-1909.8



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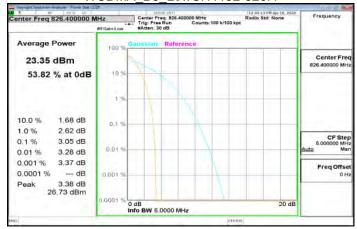
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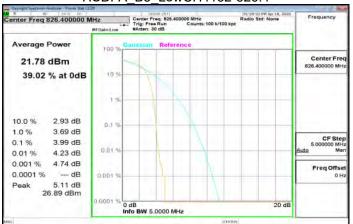


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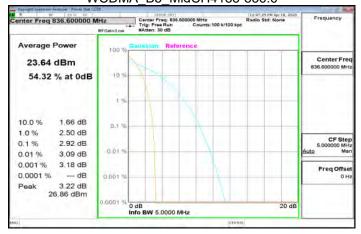
## WCDMA\_B5\_LowCH4132-826.4



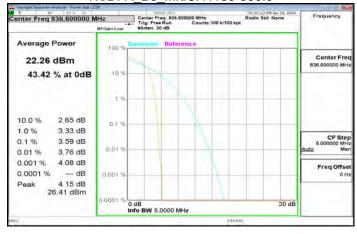
## HSDPA\_B5\_LowCH4132-826.4



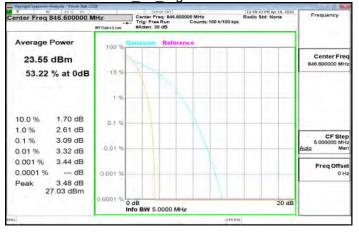
## WCDMA B5 MidCH4183-836.6



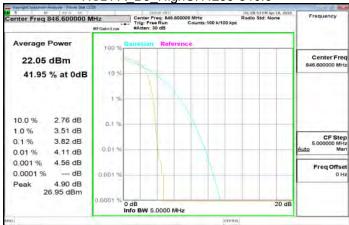
#### HSDPA B5 MidCH4183-836.6



### WCDMA B5 HighCH4233-846.6



#### HSDPA B5 HighCH4233-846.6



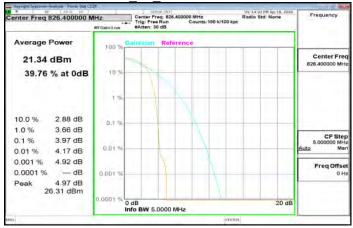
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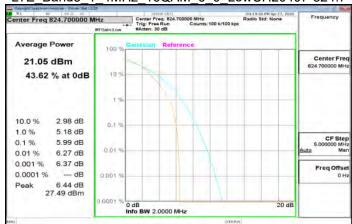


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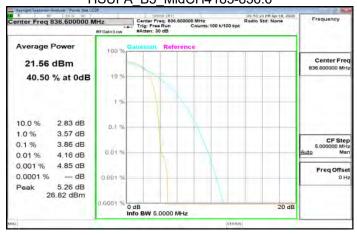
## HSUPA\_B5\_LowCH4132-826.4



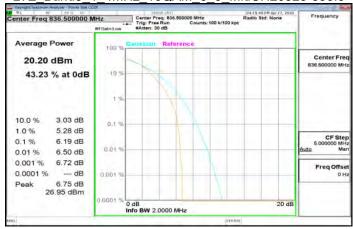
### LTE Band5 1 4MHz 16QAM 6 0 LowCH20407-824.7



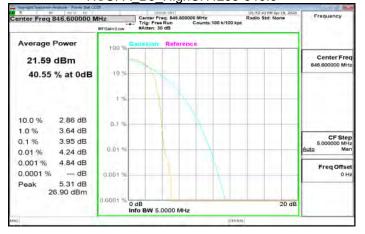
## HSUPA B5 MidCH4183-836.6



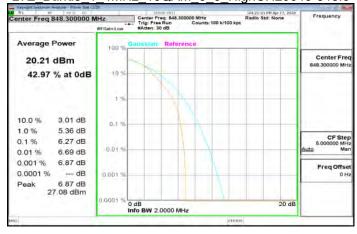
#### LTE Band5 1 4MHz 16QAM 6 0 MidCH20525-836.5



#### HSUPA B5 HighCH4233-846.6



LTE Band5 1 4MHz\_16QAM\_6\_0\_HighCH20643-848.3



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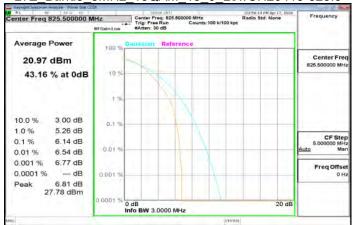
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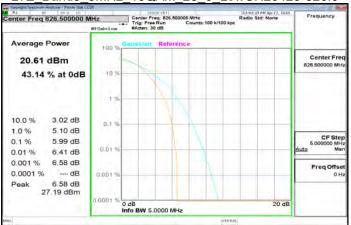


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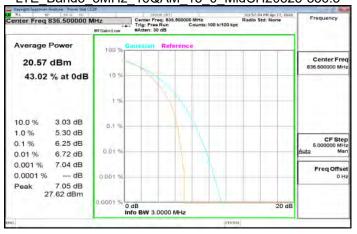
### LTE Band5 3MHz 16QAM 15 0 LowCH20415-825.5



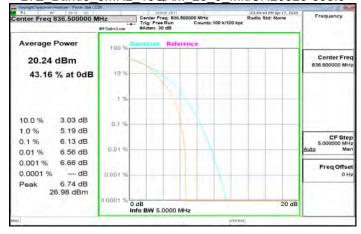
#### LTE Band5 5MHz 16QAM 25 0 LowCH20425-826.5



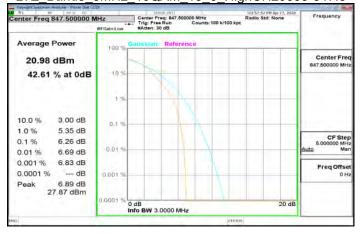
# LTE Band5 3MHz 16QAM 15 0 MidCH20525-836.5



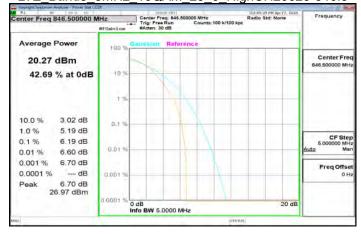
#### LTE Band5 5MHz 16QAM 25 0 MidCH20525-836.5



### LTE Band5 3MHz 16QAM 15 0 HighCH20635-847.5



### LTE Band5 5MHz 16QAM 25 0 HighCH20625-846.5

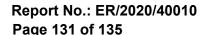


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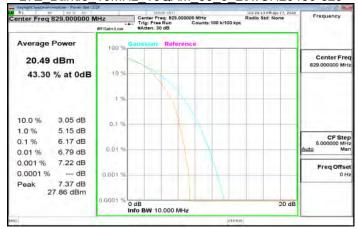
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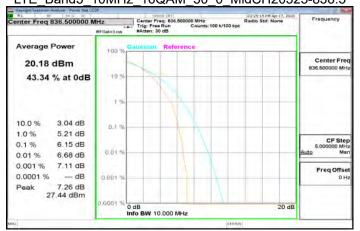
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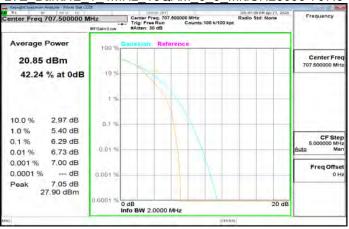
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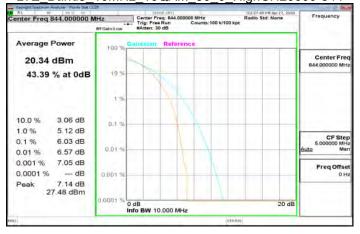
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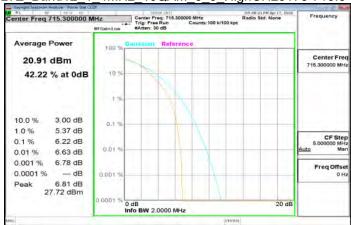
#### LTE Band12 1 4MHz 16QAM 6 0 MidCH23095-707.5



# LTE\_Band5\_10MHz\_16QAM\_50\_0\_HighCH20600-844



LTE\_Band12\_1\_4MHz\_16QAM\_6\_0\_HighCH23173-715.3



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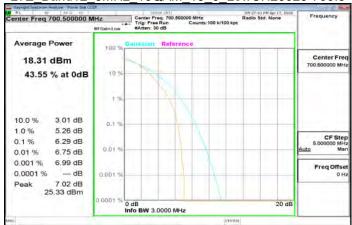
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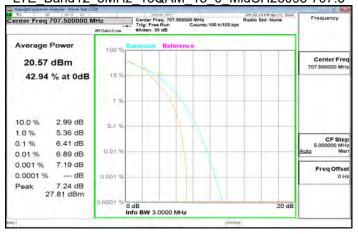
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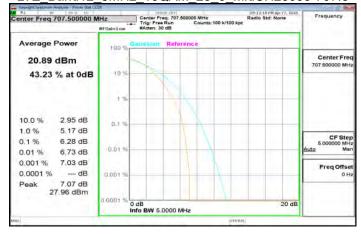
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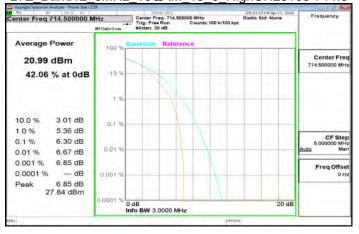
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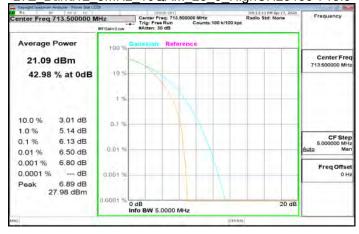
#### LTE Band12 5MHz 16QAM 25 0 MidCH23095-707.5



# LTE\_Band12\_3MHz\_16QAM\_15\_0\_HighCH23165-714.5



## LTE\_Band12\_5MHz\_16QAM\_25\_0\_HighCH23155-713.5



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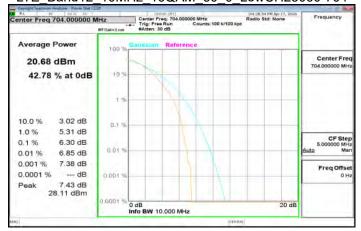
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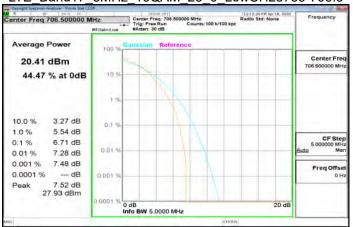


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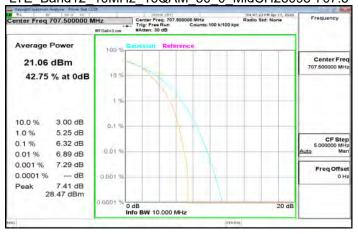
### LTE Band12 10MHz 16QAM 50 0 LowCH23060-704



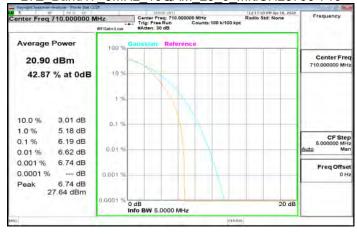
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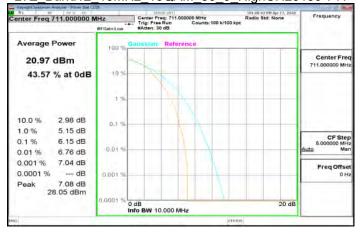
# LTE Band12 10MHz 16QAM 50 0 MidCH23095-707.5



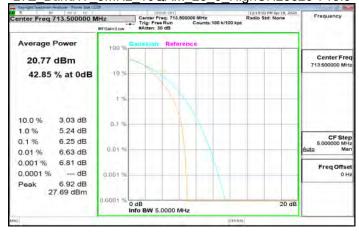
#### LTE Band17 5MHz 16QAM 25 0 MidCH23790-710



# LTE\_Band12\_10MHz\_16QAM\_50\_0\_HighCH23130-711



## LTE\_Band17\_5MHz\_16QAM\_25\_0\_HighCH23825-713.5



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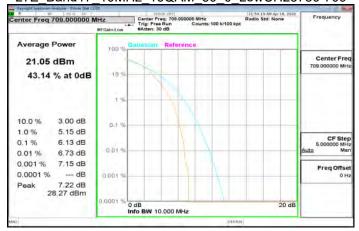
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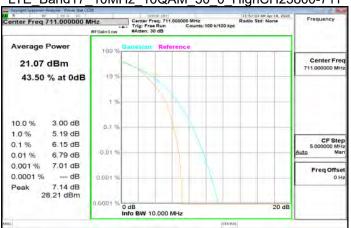


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## LTE\_Band17\_10MHz\_16QAM\_50\_0\_LowCH23780-709



# LTE\_Band17\_10MHz\_16QAM\_50\_0\_HighCH23800-711



# LTE Band17 10MHz 16QAM 50 0 MidCH23790-710



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~ End of Report ~

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