

Report No.: SZEM160100046801 Page: 1 of 252

Appendix B

Test Data for SZEM160100046801



Report No.: SZEM160100046801 Page: 2 of 252

Deee

CONTENT

		Page
1	EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA	4
2	PEAK-TO-AVERAGE RATIO	
	2.1 For GSM	17
	2.1.1 Test Band = GSM850	
	2.2 For WCDMA	
	2.2.1 Test Band = WCDMA850	
	2.2.2 Test Band = WCDMA1700	
	2.3 FOR LTE	
	2.3.1 Test Band = LTE Band 4	
	2.3.2 Test Band = LTE Band 5	
	2.3.3 Test Band = LTE Band 7	
3	MODULATION CHARACTERISTICS	
	3.1 FOR GSM	
	3.1.1 Test Band = GSM850	
	3.1.2 Test Band = GSM1900	
	3.2 For WCDMA	
	3.2.1 Test Band = WCDMA 850	
	3.3 For LTE	
	3.3.1 Test Band = LTE Band 2	
	3.3.2 Test Band = LTE Band 4	
	3.3.3 Test Band = LTE Band 5	
	3.3.4 Test Band = LTE Band 7	
4	BANDWIDTH	
	4.1 For GSM	
	4.1.1 Test Band = GSM850	
	4.1.2 Test Band = GSM1900	
	4.2 For WCDMA	
	4.2.1 Test Band = WCDMA850	
	4.2.2 Test Band = WCDMA1700	
	4.2.3 Test Band = WCDMA1900	
	4.3 For LTE	
	4.3.1 Test Band = LTE Band 2	
	4.3.2 Test Band = LTE Band 4	
	4.3.3 Test Band = LTE Band 5	
_	4.3.4 Test Band = LTE Band 7	
5		
	5.1 FOR GSM	
	5.1.1 Test Band = GSM850	
	5.1.2 Test Band = GSM1900	
	5.2 FOR WCDMA	
	5.2.1 Test Band = WCDMA 850	
	5.2.2 Test Band = WCDMA 1700	
	5.2.3 Test Band = WCDMA 1900 5.3 FOR LTE	
	5.3 FOR LTE 5.3.1 Test Band = LTE B2	
	J.J.I I tol dallu = L I E DZ	



Report No.: SZEM160100046801 Page: 3 of 252

		1 490.	0 OI EOE
	5.3.2	Test Band = LTE B4	
	5.3.3	Test Band = LTE B5	
	5.3.4	Test Band = LTE B7	
6	SPUR	IOUS EMISSION AT ANTENNA TERMINAL	
-			
		FOR GSM Test Band = GSM850	
	6.1.1 6.1.2		
	-	For WCDMA	
	6.2.1	Test Band = WCDMA850	
	6.2.2	Test Band = WCDMA1700	
	6.2.3	Test Band = WCDMA1900	
		FOR LTE	
	6.3.1	Test Band = LTE B2	
	6.3.2	Test Band = LTE B4	
	6.3.3	Test Band = LTE B5	
	6.3.4	Test Band = LTE B7	
7	FIELD	STRENGTH OF SPURIOUS RADIATION	206
		For GSM	
	7.1.1	Test Band = GSM850	
	7.1.1	Test Band = EGPRS850	
	7.1.3	Test Band = GSM1900	
	7.1.4	Test Band = EGPRS1900	
	7.2.1	Test Band = WCDMA850	
	7.2.2	Test Band = WCDMA1700	
	7.2.3	Test Band = WCDMA1900	
	7.3 F	For LTE	
	7.3.1	Test Band = LTE B2	
	7.3.2	Test Band = LTE B4	
	7.3.3	Test Band = LTE B5	
	7.3.4	Test Band = LTE B7	
8	FREQ	UENCY STABILITY	
	8.1 F	For GSM	
	8.1.1		
	8.1.2	Frequency Error VS. Temperature	
	8.1.3	Frequency Error VS. Temperature	
	8.2 F	For WCDMA	
	8.2.1	Frequency Error VS. Voltage	
	8.2.2	Frequency Error VS. Temperature	
		FOR LTE	
	8.3.1	Frequency Error VS. Voltage	SCC 247
	8.3.2	Frequency Error VS. Temperature	
			0 114 10
			山休川人



Report No.: SZEM160100046801 Page: 4 of 252

1 Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Part 1 – RF Conducted Power of Transmitter for GSM850

		RF Output Power(Conducted)								
TEST CONDITIONS	Channel128(L)		Channel19	0(M)	Channel251(H)					
TEST CONDITIONS	824.2MHz		836.6 Mł	Ηz	848.8 MHz					
Tnom/ Vnom	Measured	Limit	Measured	Limit	Measured	Limit				
	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)				
GSM/TM1	33.21	38.5	33.12	38.5	33.11	38.5				
(GSM ONLY)	55.21	30.5		30.5						
GSM/TM1 (GPRS)	32.82	38.5	32.66	38.5	32.63	38.5				
GSM/TM2 (EGPRS)	26.27	38.5	26.37	38.5	26.15	38.5				

Part 2– Effective Radiated Power of Transmitter (ERP) for GSM850

I alt a	Fait 2- Effective Radiated Fower of Transmitter (ERF) for GSM650									
Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBd)	Cable Loss (dB)	Substitution Level(ERP) / dBm	Limit (dBm)	Result		
GSM/TM1 (GSM ONLY)	824.2	33.71	28.34	5.95	0.6	33.69	38.5	Pass		
GSM/TM1 (GSM ONLY)	836.6	33.32	27.26	6.65	0.6	33.31	38.5	Pass		
GSM/TM1 (GSM ONLY)	848.8	33.77	27.48	6.85	0.6	33.73	38.5	Pass		
GSM/TM1 (GPRS)	824.2	32.62	27.26	5.95	0.6	32.61	38.5	Pass		
GSM/TM1 (GPRS)	836.6	32.16	26.08	6.65	0.6	32.13	38.5	Pass		
GSM/TM1 (GPRS)	848.8	32.87	26.59	6.85	0.6	32.84	38.5	Pass		
GSM/TM2 (EGPRS)	824.2	26.61	21.23	5.95	0.6	26.58	38.5	Pass		
GSM/TM2 (EGPRS)	836.6	26.13	20.06	6.65	0.6	26.11	38.5	Pass		
GSM/TM2 (EGPRS)	848.8	26.65	20.37	6.85	0.6	26.62	38.5	Pass		

Note:

a: For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS

[&]quot;This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms and conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: SZEM160100046801 Page: 5 of 252

Part 3 – RF Conducted Power of Transmitter for GSM1900

		RF Output Power(Conducted)									
TEST CONDITIONS	Channel512(L)		Channel66	1(M)	Channel810(H)						
TEST CONDITIONS	1850.2MHz		1880 MHz		1909.8 MHz						
Tnom/ Vnom	Measured	Limit	Measured	Limit	Measured	Limit					
	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)					
GSM/TM1	29.99	22	20.64	33	29.25	33					
(GSM ONLY)	29.99	33	29.61	33	29.25	- 33					
GSM/TM1 (GPRS)	29.98	33	29.62	33	29.25	33					
GSM/TM2 (EGPRS)	26.48	33	26.25	33	25.71	33					

Part 4– Effective Isotropic Radiated Power of Transmitter (EIRP) for GSM1900

Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBi)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result
GSM/TM1 (GSM ONLY)	1850.2	30.99	24.05	7.9	1	30.95	33	Pass
GSM/TM1 (GSM ONLY)	1880	30.61	23.68	7.9	1	30.58	33	Pass
GSM/TM1 (GSM ONLY)	1909.8	30.25	23.33	7.9	1	30.23	33	Pass
GSM/TM1 (GPRS)	1850.2	30.98	24.05	7.9	1	30.95	33	Pass
GSM/TM1 (GPRS)	1880	30.62	23.7	7.9	1	30.6	33	Pass
GSM/TM1 (GPRS)	1909.8	30.25	23.31	7.9	1	30.21	33	Pass
GSM/TM2 (EGPRS)	1850.2	27.48	20.54	7.9	1	27.44	33	Pass
GSM/TM2 (EGPRS)	1880	27.25	20.31	7.9	1	27.21	33	Pass
GSM/TM2 (EGPRS)	1909.8	26.71	19.78	7.9	1	26.68	33	Pass

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > $3 \times RBW$.

Detector: RMS

[&]quot;This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: SZEM160100046801 Page: 6 of 252

Part 5 – RF Conducted Power of Transmitter for WCDMA BAND 2

		RF Output Power(Conducted)								
TEST	Channel 9262	(L)	Channel 9400	(M)	Channel 9538	(H)				
CONDITIONS	1852.4MHz	<u>r</u>	1880.0MHz	:	1907.6MHz					
Tnom/ Vnom	Measured(dBm)	Limit (dBm)	Measured(dBm)	Limit (dBm)	Measured(dBm)	Limit (dBm)				
WCDMA	22.21	33	22.24	33	22.38	33				
HSDPA	21.44	33	21.45	33	21.46	33				
HSUPA	21.32	33	21.33	33	21.36	33				

Part 6– Effective Radiated Power of Transmitter (EIRP) for WCDMA BAND 2

Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBi)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result
WCDMA	1852.4	23.21	16.32	7.9	1	23.22	33	Pass
WCDMA	1880.0	23.24	16.33	7.9	1	23.23	33	Pass
WCDMA	1907.6	23.38	16.47	7.9	1	23.37	33	Pass
HSDPA	1852.4	22.44	15.56	7.9	1	22.46	33	Pass
HSDPA	1880.0	22.45	15.53	7.9	1	22.43	33	Pass
HSDPA	1907.6	22.46	15.54	7.9	1	22.44	33	Pass
HSUPA	1852.4	22.32	15.41	7.9	1	22.31	33	Pass
HSUPA	1880.0	22.33	15.39	7.9	1	22.29	33	Pass
HSUPA	1907.6	22.36	15.44	7.9	1	22.34	33	Pass

Note:

a: For getting the EIRP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > $3 \times RBW$.

Detector: RMS



Report No.: SZEM160100046801 Page: 7 of 252

Part 7 – RF Conducted Power of Transmitter for WCDMA BAND 4

		RF Output Power(Conducted)								
TEST	Channel 1312	(L)	Channel 1413	(M)	Channel 1513	(H)				
CONDITIONS	1712.4MHz	<u>r</u>	1732.6MHz	<u>:</u>	1752.6MHz					
Tnom/ Vnom	Measured(dBm)	Limit (dBm)	Measured(dBm)	Limit (dBm)	Measured(dBm)	Limit (dBm)				
WCDMA	22.71	30	22.69	30	22.78	30				
HSDPA	21.74	30	21.73	30	21.83	30				
HSUPA	SUPA 21.62		21.71	30	21.64	30				

Part 8– Effective Radiated Power of Transmitter (ERP) for WCDMA BAND 4

Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBi)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result
WCDMA	1712.4	23.71	16.89	7.8	1	23.69	30	Pass
WCDMA	1732.6	23.69	16.86	7.8	1	23.66	30	Pass
WCDMA	1752.6	23.78	16.93	7.8	1	23.73	30	Pass
HSDPA	1712.4	22.74	15.92	7.8	1	22.72	30	Pass
HSDPA	1732.6	22.73	15.91	7.8	1	22.71	30	Pass
HSDPA	1752.6	22.83	16.02	7.8	1	22.82	30	Pass
HSUPA	1712.4	22.62	15.81	7.8	1	22.61	30	Pass
HSUPA	1732.6	22.71	15.89	7.8	1	22.69	30	Pass
HSUPA	1752.6	22.64	15.83	7.8	1	22.63	30	Pass

Note:

a: For getting the EIRP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > $3 \times RBW$.

Detector: RMS



Report No.: SZEM160100046801 Page: 8 of 252

Part 9 – RF Conducted Power of Transmitter for WCDMA BAND 5

		RF Output Power(Conducted)								
TEST	Channel 4132	:(L)	Channel 4182	(M)	Channel 4233	(H)				
CONDITIONS	826.4MHz		836.4MHz		846.6MHz					
Tnom/ Vnom	Measured(dBm)	Limit (dBm)	Measured(dBm)	Limit (dBm)	Measured(dBm)	Limit (dBm)				
WCDMA	23.21	38.5	23.2	38.5	23.38	38.5				
HSDPA	22.24	38.5	22.25	38.5	22.36	38.5				
HSUPA	22.11	38.5	22.23	38.5	22.16	38.5				

Part 10– Effective Radiated Power of Transmitter (ERP) for WCDMA BAND 5

Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBd)	Cable Loss (dB)	Substitution Level(ERP) / dBm	Limit (dBm)	Result
WCDMA	826.4	23.91	17.69	5.95	0.6	23.04	38.5	Pass
WCDMA	836.4	23.90	16.96	6.65	0.6	23.01	38.5	Pass
WCDMA	846.6	24.08	16.82	6.85	0.6	23.07	38.5	Pass
HSDPA	826.4	22.94	16.76	5.95	0.6	22.11	38.5	Pass
HSDPA	836.4	22.95	16.09	6.65	0.6	22.14	38.5	Pass
HSDPA	846.6	23.06	15.93	6.85	0.6	22.18	38.5	Pass
HSUPA	826.4	22.81	16.65	5.95	0.6	22.00	38.5	Pass
HSUPA	836.4	22.93	15.97	6.65	0.6	22.02	38.5	Pass
HSUPA	846.6	22.86	15.78	6.85	0.6	22.03	38.5	Pass

Note:

a: For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > $3 \times RBW$.

Detector: RMS



Report No.: SZEM160100046801 Page: 9 of 252

Part 11 – RF Conducted Power of Transmitter for LTE BAND 2

			RF Output Power(Conducted)							
Bandwidth	TEST CONDITIONS	Channel (L)		Channel (M)		Channel (H)				
	Tnom/ Vnom	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)			
1.4MHz	QPSK/ TM1	23.06	33	22.68	33	22.73	33			
	16QAM/ TM2	21.93	33	22.13	33	21.96	33			
	QPSK/ TM1	23.11	33	22.64	33	22.68	33			
3MHz	16QAM/ TM2	21.89	33	22.08	33	21.89	33			
5MHz	QPSK/ TM1	23.08	33	22.56	33	22.69	33			
SIVIEZ	16QAM/ TM2	21.82	33	22.15	33	21.87	33			
	QPSK/ TM1	22.7	33	22.61	33	22.65	33			
10MHz	16QAM/ TM2	21.71	33	21.88	33	22.04	33			
	QPSK/ TM1	22.74	33	22.76	33	22.86	33			
15MHz	16QAM/ TM2	22.05	33	22.06	33	22.21	33			
	QPSK/ TM1	22.67	33	22.77	33	22.88	33			
20MHz	16QAM/ TM2	22.18	33	22.22	33	22.23	33			



Report No.: SZEM160100046801 Page: 10 of 252

. ___

Part 12–Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE									
Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBi)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result	
LTE	1850.7	24.06	16.63	7.9	1	24.03	33	Pass	
TM1/1.4M	1880	23.68	16.76	7.9	1	23.66	33	Pass	
Hz	1909.3	23.73	16.82	7.9	1	23.72	33	Pass	
LTE	1850.7	22.93	15.99	7.9	1	22.89	33	Pass	
TM2/1.4M	1880	23.13	16.21	7.9	1	23.11	33	Pass	
Hz	1909.3	22.96	16.03	7.9	1	22.93	33	Pass	
LTE	1851.5	24.11	17.2	7.9	1	24.1	33	Pass	
TM1/3MHz	1880	23.64	16.73	7.9	1	23.63	33	Pass	
	1908.5	23.68	16.74	7.9	1	23.64	33	Pass	
	1851.5	22.89	15.96	7.9	1	22.86	33	Pass	
LTE TM2/3MHz	1880	23.08	16.17	7.9	1	23.07	33	Pass	
	1908.5	22.89	15.96	7.9	1	22.86	33	Pass	
	1852.5	24.08	17.15	7.9	1	24.05	33	Pass	
	1880	23.56	16.63	7.9	1	23.53	33	Pass	
TM1/5MHz	1907.5	23.69	16.77	7.9	1	23.67	33	Pass	
	1852.5	22.82	15.91	7.9	1	22.81	33	Pass	
	1880	23.15	16.22	7.9	1	23.12	33	Pass	
TM2/5MHz	1907.5	22.87	15.94	7.9	1	22.84	33	Pass	
	1855	23.7	16.78	7.9	1	23.68	33	Pass	
LTE TM1/	1880	23.61	16.69	7.9	1	23.59	33	Pass	
10MHz	1905	23.65	16.73	7.9	1	23.63	33	Pass	
	1855	22.71	15.78	7.9	1	22.68	33	Pass	
LTE TM2/	1880	22.88	15.95	7.9	1	22.85	33	Pass	
10MHz	1905	23.04	16.12	7.9	1	23.02	33	Pass	
	1857.5	23.74	16.81	7.9	1	23.71	33	Pass	
LTE TM1/	1880	23.76	16.82	7.9	1	23.72	33	Pass	
15MHz	1902.5	23.86	16.95	7.9	1	23.85	33	Pass	
	1857.5	23.05	16.14	7.9	1	23.04	33	Pass	
LTE TM2/	1880	23.06	16.13	7.9	1	23.03	33	Pass	
15MHz	1902.5	23.21	16.3	7.9	1	23.2	33	Pass	
	1860	23.67	16.71	7.9	1	23.61	33	Pass	
LTE TM1/	1880	23.77	16.85	7.9	1	23.75	33	Pass	
20MHz	1900	23.88	16.96	7.9	1	23.86	33	Pass	
	1860	23.18	16.24	7.9	1	23.14	33	Pass	
LTE TM2/	1880	23.22	16.29	7.9	1	23.19	33	Pass	
20MHz	1900	23.23	16.76	7.9	1	23.18	33	Pass	

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > 3 x RBW. Detector: RMS



Report No.: SZEM160100046801 Page: 11 of 252

			RF	Output Power	(Conducte	ed)	
Bandwidth	TEST CONDITIONS	Channel (L)		Channel (M)		Channel (H)	
	Tnom/ Vnom	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)
1 4Μ⊔⇒	QPSK/ TM1	22.78	30	22.50	30	22.54	30
1.4MHz	16QAM/ TM2	22.07	30	21.36	30	21.50	30
	QPSK/ TM1	22.72	30	22.39	30	22.53	30
3MHz	16QAM/ TM2	21.59	30	21.48	30	21.83	30
5MHz	QPSK/ TM1	22.83	30	22.55	30	22.66	30
	16QAM/ TM2	22.31	30	21.7	30	21.69	30
	QPSK/ TM1	22.75	30	22.49	30	22.45	30
10MHz	16QAM/ TM2	21.7	30	21.57	30	22.13	30
	QPSK/ TM1	22.91	30	22.65	30	22.64	30
15MHz	16QAM/ TM2	22.12	30	21.53	30	21.92	30
	QPSK/ TM1	22.84	30	22.69	30	22.65	30
20MHz	16QAM/ TM2	22.15	30	22.12	30	22.13	30

Part 13 – RF Conducted Power of Transmitter for LTE BAND 4



Report No.: SZEM160100046801 Page: 12 of 252

					i aye.	12 01 232	-	
Part 14	-Effective I	sotropic Ra	diated Pov	wer of Transmi	itter (EIR	P) for LTE		
Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBi)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result
LTE	1710.7	23.78	20.25	7.8	1	23.75	30	Pass
TM1/1.4M	1732.5	23.50	16.68	7.8	1	23.48	30	Pass
Hz	1754.3	23.54	16.71	7.8	1	23.51	30	Pass
LTE	1710.7	23.07	16.25	7.8	1	23.05	30	Pass
TM2/1.4M	1732.5	22.36	15.54	7.8	1	22.34	30	Pass
Hz	1754.3	22.50	15.68	7.8	1	22.48	30	Pass
	1711.5	23.72	16.9	7.8	1	23.7	30	Pass
	1732.5	23.39	16.56	7.8	1	23.36	30	Pass
TM1/3MHz	1753.5	23.53	16.71	7.8	1	23.51	30	Pass
	1711.5	22.59	15.77	7.8	1	22.57	30	Pass
LTE TM2/3MHz	1732.5	22.48	15.65	7.8	1	22.45	30	Pass
	1753.5	22.83	16.01	7.8	1	22.81	30	Pass
1.75	1712.5	23.83	16.99	7.8	1	23.79	30	Pass
	1732.5	23.55	16.73	7.8	1	23.53	30	Pass
TM1/5MHz	1752.5	23.66	16.82	7.8	1	23.62	30	Pass
	1712.5	23.31	16.48	7.8	1	23.28	30	Pass
LTE TM2/5MHz	1732.5	22.70	15.88	7.8	1	22.68	30	Pass
	1752.5	22.69	15.86	7.8	1	22.66	30	Pass
	1715	23.75	16.92	7.8	1	23.72	30	Pass
LTE TM1/ 10MHz	1732.5	23.49	16.66	7.8	1	23.46	30	Pass
	1750	23.45	16.63	7.8	1	23.43	30	Pass
LTE TM2/	1715	22.70	15.87	7.8	1	22.67	30	Pass
10MHz	1732.5	22.57	15.73	7.8	1	22.53	30	Pass
	1750	23.13	16.31	7.8	1	23.11	30	Pass
LTE TM1/	1717.5	23.91	17.09	7.8	1	23.89	30	Pass
15MHz	1732.5	23.65	16.82	7.8	1	23.62	30	Pass
TOIVITIZ	1747.5	23.64	16.83	7.8	1	23.63	30	Pass
LTE TM2/	1717.5	23.12	16.31	7.8	1	23.11	30	Pass
15MHz -	1732.5	22.53	15.71	7.8	1	22.51	30	Pass
	1747.5	22.92	16.09	7.8	1	22.89	30	Pass
LTE TM1/	1720	23.84	16.99	7.8	1	23.79	30	Pass
20MHz	1732.5	23.69	16.86	7.8	1	23.66	30	Pass
20101112	1745	23.65	16.82	7.8	1	23.62	30	Pass
LTE TM2/	1720	23.15	16.33	7.8	1	23.13	30	Pass
20MHz	1732.5	23.12	16.31	7.8	1	23.11	30	Pass
ZUIVITIZ	1745	23.13	16.29	7.8	1	23.09	30	Pass

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > 3 x RBW. Detector: RMS



Report No.: SZEM160100046801 Page: 13 of 252

Part 15 – RF Conducted Power of Transmitter for LTE BAND 5

			RF	Output Power	(Conducte	ed)	
Bandwidth	TEST CONDITIONS	Channel (L)		Channel (M)		Channel (H)	
	Tnom/ Vnom	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)
1.4MHz	QPSK/ TM1	22.52	38.5	22.23	38.5	22.36	38.5
1.4IVI⊓Z	16QAM/ TM2	21.45	38.5	21.34	38.5	21.69	38.5
	QPSK/ TM1	22.63	38.5	22.35	38.5	22.46	38.5
3MHz	16QAM/ TM2	22.17	38.5	21.56	38.5	21.55	38.5
	QPSK/ TM1	22.73	38.5	22.46	38.5	22.47	38.5
5MHz	16QAM/ TM2	21.99	38.5	21.35	38.5	21.78	38.5
	QPSK/ TM1	22.59	38.5	22.31	38.5	22.27	38.5
10MHz	16QAM/ TM2	21.56	38.5	21.43	38.5	21.98	38.5

Part 16–Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE

Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBd)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result
LTE	824.7	23.52	18.56	5.95	1	23.51	38.5	Pass
TM1/1.4M	836.5	23.23	17.56	6.65	1	23.21	38.5	Pass
Hz	848.3	23.36	17.49	6.85	1	23.34	38.5	Pass
LTE	824.7	22.45	17.49	5.95	1	22.44	38.5	Pass
TM2/1.4M	836.5	22.34	16.66	6.65	1	22.31	38.5	Pass
Hz	848.3	22.69	16.81	6.85	1	22.66	38.5	Pass
LTE TM1/	825.5	23.63	18.66	5.95	1	23.61	38.5	Pass
3MHz	836.5	23.35	17.67	6.65	1	23.32	38.5	Pass
SIVITIZ	847.5	23.46	17.58	6.85	1	23.43	38.5	Pass
	825.5	23.17	18.21	5.95	1	23.16	38.5	Pass
LTE TM2/ 3MHz	836.5	22.56	16.88	6.65	1	22.53	38.5	Pass
	847.5	22.55	16.67	6.85	1	22.52	38.5	Pass
LTE TM1/	826.5	23.73	18.76	5.95	1	23.71	38.5	Pass
5MHz	836.5	23.46	17.78	6.65	1	23.43	38.5	Pass
	846.5	23.47	17.59	6.85	1	23.44	38.5	Pass
	826.5	22.99	18.03	5.95	1	22.98	38.5	Pass
LTE TM2/ 5MHz	836.5	22.35	16.69	6.65	1	22.34	38.5	Pass
	846.5	22.78	16.89	6.85	1	22.74	38.5	Pass
	829	23.59	18.62	5.95	1	23.57	38.5	Pass
LTE TM1/ 10MHz	836.5	23.31	17.64	6.65	1	23.29	38.5	Pass
TOIVINZ	844	23.27	17.41	6.85	1	23.26	38.5	Pass
	829	22.56	17.59	5.95	1	22.54	38.5	Pass
LTE TM2/ 10MHz	836.5	22.43	16.75	6.65	1	22.4 🚬	38.5	Pass
	844	22.98	17.09	6.85	1	22.94	38.5	Pass

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following form should be taken to calculate it,

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > $3 \times RBW$.

Detector: RMS

[&]quot;This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: SZEM160100046801 Page: 14 of 252

			RF	Output Power	(Conducte	ed)	
Bandwidth	TEST CONDITIONS	Channel (L)		Channel (M)		Channel (H)	
	Tnom/ Vnom	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)	Measured (dBm)	Limit (dBm)
5MHz	QPSK/ TM1	22.14	33	22.20	33	22.26	33
SIVIEZ	16QAM/ TM2	21.35	33	21.51	33	21.18	33
	QPSK/ TM1	22.09	33	22.25	33	22.18	33
10MHz	16QAM/ TM2	21.31	33	21.20	33	21.26	33
	QPSK/ TM1	22.17	33	22.25	33	22.09	33
15MHz	16QAM/ TM2	21.24	33	21.47	33	21.08	33
	QPSK/ TM1	22.32	33	22.38	33	22.11	33
20MHz	16QAM/ TM2	21.09	33	21.54	33	21.30	33

Part 17 – RF Conducted Power of Transmitter for LTE BAND 7

Part 18–Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE

Test Mode	Freq. (MHz)	Meas. Level (dBm)	SGP (dBm)	Substitution Gain(dBi)	Cable Loss (dB)	Substitution Level(EIRP) / dBm	Limit (dBm)	Result
LTE	2502.5	23.14	15.71	8.4	1	23.11	33	Pass
TM1/5MHz	2535	23.2	15.79	8.4	1	23.19	33	Pass
TIM 1/ JIMI 12	2567.5	23.26	15.83	8.4	1	23.23	33	Pass
LTE	2502.5	22.35	14.92	8.4	1	22.32	33	Pass
TM2/5MHz	2535	22.51	15.09	8.4	1	22.49	33	Pass
	2567.5	22.18	14.76	8.4	1	22.16	33	Pass
LTE TM1/	2505	23.09	15.67	8.4	1	23.07	33	Pass
10MHz	2535	23.25	15.82	8.4	1	23.22	33	Pass
	2565	23.18	15.75	8.4	1	23.15	33	Pass
LTE TM2/	2505	22.31	14.88	8.4	1	22.28	33	Pass
10MHz	2535	22.20	14.79	8.4	1	22.19	33	Pass
	2565	22.26	14.84	8.4	1	22.24	33	Pass
LTE TM1/	2507.5	23.17	15.76	8.4	1	23.16	33	Pass
15MHz	2535	23.25	15.83	8.4	1	23.23	33	Pass
TOIVITIZ	2562.5	23.09	15.67	8.4	1	23.07	33	Pass
LTE TM2/	2507.5	22.24	14.81	8.4	1	22.21	33	Pass
15MHz	2535	22.47	15.05	8.4	1	22.45	33	Pass
TOIVITIZ	2562.5	22.08	14.66	8.4	1	22.06	33	Pass
	2510	23.32	15.89	8.4	1	23.29	33	Pass
LTE TM1/ 20MHz	2535	23.38	15.95	8.4	1	23.35	33	Pass
	2560	23.11	15.69	8.4	1	23.09	33	Pass
	2510	22.09	14.66	8.4	1	22.06	33	Pass
LTE TM2/ 20MHz	2535	22.54	15.12	8.4	1	22.52	33	Pass
	2560	22.3	14.88	8.4	1	22.28	33	Pass

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > $3 \times RBW$.

Detector: RMS

[&]quot;This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_e-document.htm</u>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."



Report No.: SZEM160100046801 Page: 15 of 252

2 Peak-to-Average Ratio

Dant I. Taat Daaulta

Failt-Testr	lesuits	-		Part I - Test Results									
Test Band	Test Mode	Test Channel	Test Channel Measured[dB] Limit										
		LCH	9.09	13	PASS								
	GSM/TM1	MCH	9.41	13	PASS								
GSM850		HCH	9.47	13	PASS								
GSIMOSU	GSM/TM2	LCH	12.45	13	PASS								
		MCH	12.35	13	PASS								
		HCH	12.35	13	PASS								

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
		LCH	2.71	13	PASS
WCDMA850	UMTS/TM1	MCH	2.74	13	PASS
		НСН	2.73	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.91	13	PASS
		MCH	2.72	13	PASS
		HCH	2.82	13	PASS



Report No.: SZEM160100046801 Page: 16 of 252

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
		LCH	4.90	13	PASS
	LTE TM1/ 20MHz	MCH	5.02	13	PASS
LTE Band 4	2011112	НСН	4.98	13	PASS
LTE Dallu 4	/	LCH	5.67	13	PASS
	LTE TM2/ 20MHz	MCH	5.80	13	PASS
	2011112	HCH	5.79	13	PASS
		LCH	5.53	13	PASS
	LTE TM1/ 10MHz	MCH	5.60	13	PASS
		НСН	5.56	13	PASS
LTE Band 5	LTE TM2/ 10MHz	LCH	6.17	13	PASS
		MCH	6.29	13	PASS
	1010112	НСН	6.31	13	PASS
		LCH	5.26	13	PASS
	LTE TM1/ 20MHz	MCH	5.39	13	PASS
LTE Band 7	2011112	HCH	5.40	13	PASS
		LCH	5.98	13	PASS
	LTE TM2/ 20MHz	MCH	6.05	13	PASS
	2011112	HCH	6.12	13	PASS



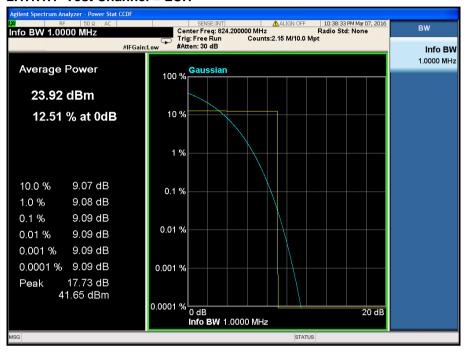
Report No.: SZEM160100046801 Page: 17 of 252

Part II – Test Plots

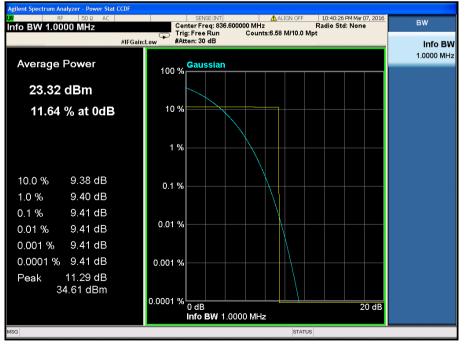
2.1 For GSM

2.1.1 Test Band = GSM850 2.1.1.1 Test Mode = GSM/TM1

2.1.1.1.1 Test Channel = LCH

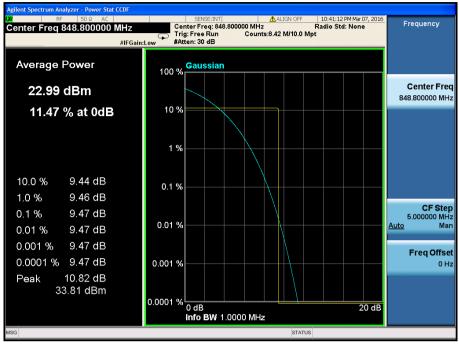


2.1.1.1.2 Test Channel = MCH





Report No.: SZEM160100046801 Page: 18 of 252



2.1.1.1.3 Test Channel = HCH

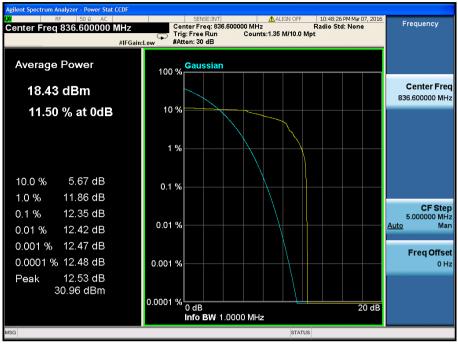
2.1.1.2 Test Mode = GSM/TM2

2.1.1.2.1 Test Channel = LCH





Report No.: SZEM160100046801 Page: 19 of 252



2.1.1.2.2 Test Channel = LCH

2.1.1.2.3 Test Channel = LCH





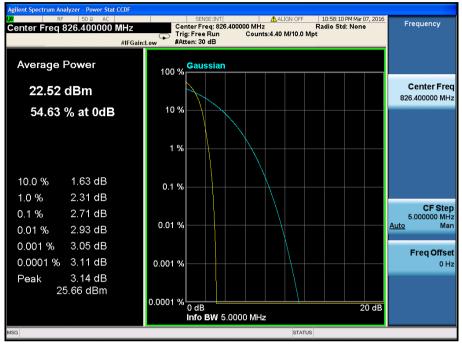
Report No.: SZEM160100046801 Page: 20 of 252

2.2 For WCDMA

2.2.1 Test Band = WCDMA850

2.2.1.1 Test Mode = UMTS/TM1

2.2.1.1.1 Test Channel = LCH

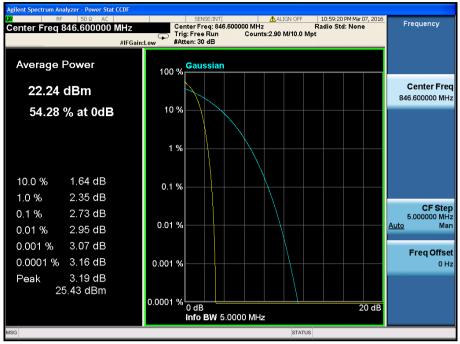


2.2.1.1.2 Test Channel = MCH





Report No.: SZEM160100046801 Page: 21 of 252

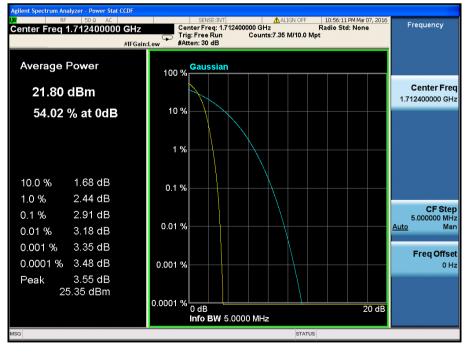


2.2.1.1.3 Test Channel = HCH

2.2.2 Test Band = WCDMA1700

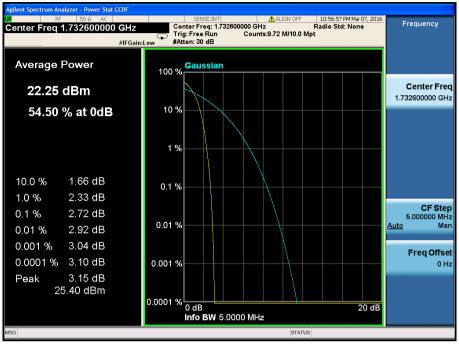
2.2.2.1 Test Mode = UMTS/TM1

2.2.2.1.1 Test Channel = LCH





Report No.: SZEM160100046801 Page: 22 of 252



2.2.2.1.2 Test Channel = MCH

2.2.2.1.3 Test Channel =HCH





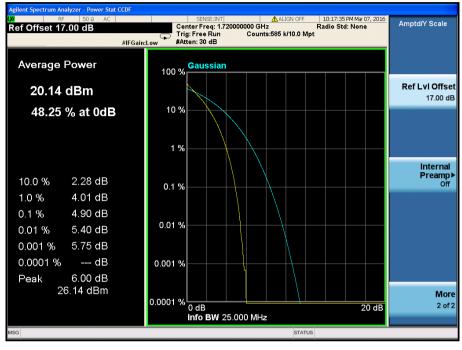
Report No.: SZEM160100046801 Page: 23 of 252

2.3 For LTE

2.3.1 Test Band = LTE Band 4

2.3.1.1 Test Mode = LTE/TM1 20MHz

2.3.1.1.1 Test Channel = LCH



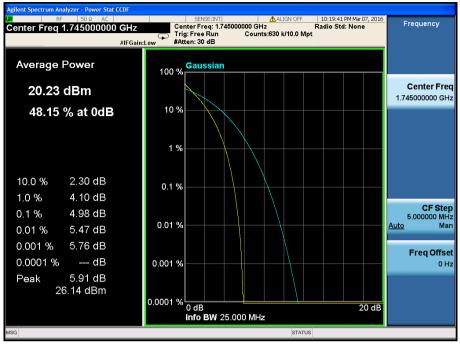
2.3.1.1.2 Test Channel = MCH







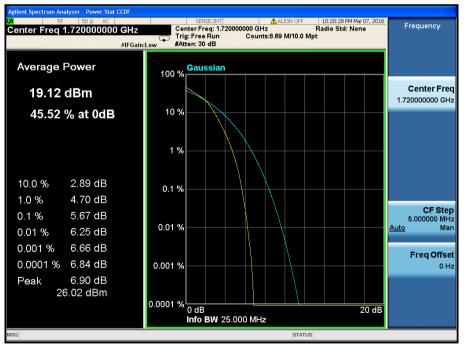
Report No.: SZEM160100046801 Page: 24 of 252



2.3.1.1.3 Test Channel = HCH

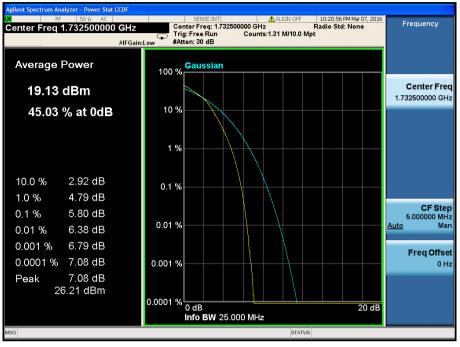
2.3.1.2 Test Mode = LTE/TM2 20MHz

2.3.1.2.1 Test Channel = LCH



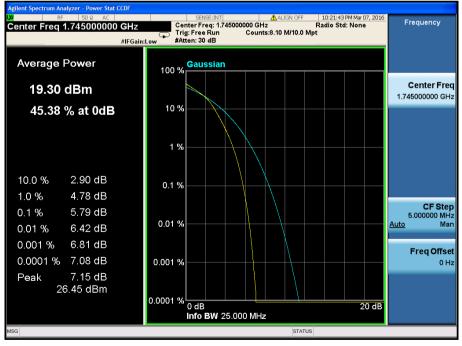


Report No.: SZEM160100046801 Page: 25 of 252



2.3.1.2.2 Test Channel = MCH

2.3.1.2.3 Test Channel = HCH



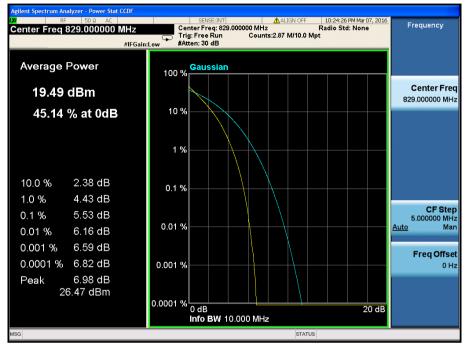


Report No.: SZEM160100046801 Page: 26 of 252

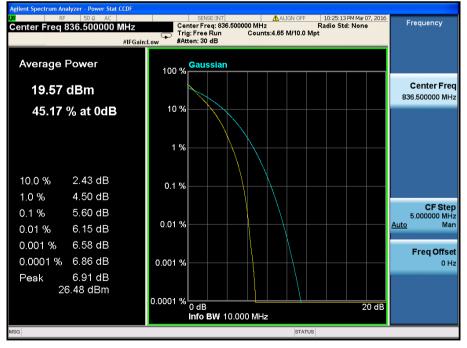
2.3.2 Test Band = LTE Band 5

2.3.2.1 Test Mode = LTE/TM1 10MHz

2.3.2.1.1 Test Channel = LCH



2.3.2.1.2 Test Channel = MCH





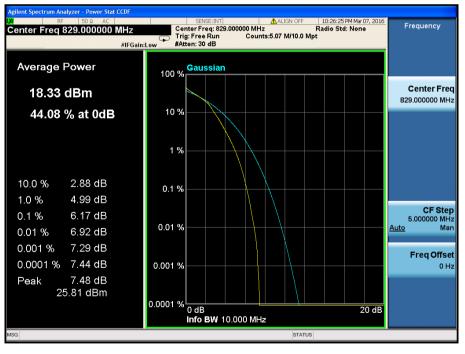
Report No.: SZEM160100046801 Page: 27 of 252



2.3.2.1.3 Test Channel = HCH

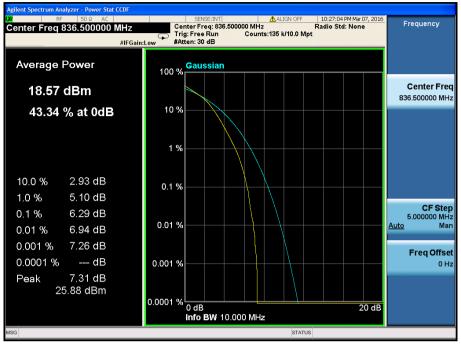
2.3.2.2 Test Mode = LTE/TM2 10MHz

2.3.2.2.1 Test Channel = LCH





Report No.: SZEM160100046801 Page: 28 of 252



2.3.2.2.2 Test Channel = MCH

2.3.2.2.3 Test Channel = HCH



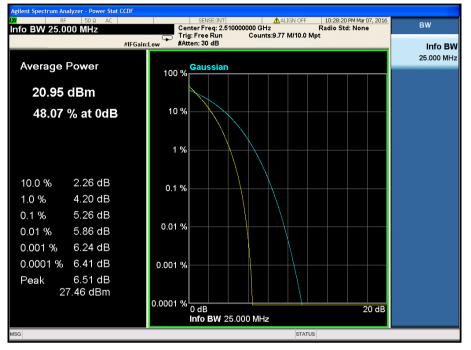


Report No.: SZEM160100046801 Page: 29 of 252

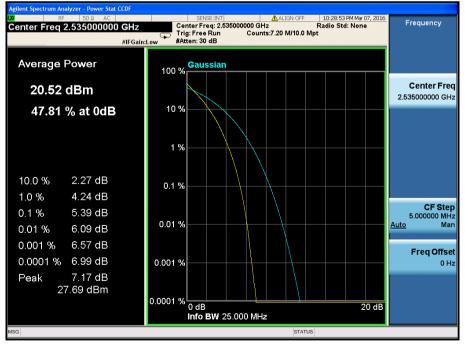
2.3.3 Test Band = LTE Band 7

2.3.3.1 Test Mode = LTE/TM1 20MHz

2.3.3.1.1 Test Channel = LCH

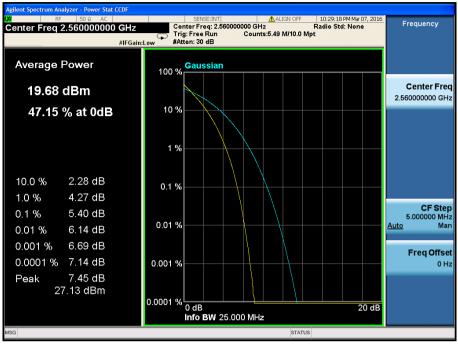


2.3.3.1.2 Test Channel = MCH





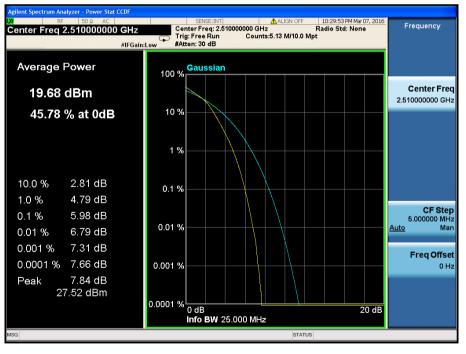
Report No.: SZEM160100046801 Page: 30 of 252



2.3.3.1.3 Test Channel = HCH

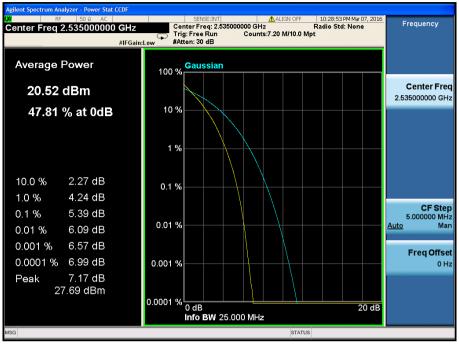
2.3.3.2 Test Mode = LTE/TM2 20MHz

2.3.3.2.1 Test Channel = LCH





Report No.: SZEM160100046801 Page: 31 of 252



2.3.3.2.2 Test Channel = MCH

2.3.3.2.3 Test Channel = HCH





Report No.: SZEM160100046801 Page: 32 of 252

3 Modulation Characteristics

Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

- 3.1.1.1 Test Mode = GSM/TM1
- 3.1.1.1.1 Test Channel = MCH

🐼 GSMa	50 Modulat	ion		P.D. MCS 4 (°°1)≫ ↓ †††† Test M. A	Connect Control
[°] Max. Level: Auto +20	Low Noise Off Q :	PCL: / 01	Channel ff 🛛 🔁: -	: 190 Meas Slot : 3 Off Current	R Ext.Phase
+10 +5					Appli- cation
+0	~~~~~				Analyzer Level _{Trg.}
-15 -20 0 20	40 60	80	100	Sym. 120 140	MS Signal
	C (correlation o.k.) Current	Average	Max / Min	- 0.20 Sym. Timing Advance Error	BS Signal
Phase Error Peak RMS Origin Offset	1.6 ° 0.4 ° - 68.4 ав	1.6° 0.4° - 57.9 dB	2.7 ° 0.6 ° - 50.1 dB	28.0 dBm Avg. Burst Power (Cur.) 100 Bursts	Network
I/Q Imbalance	– 55.6 dB 🔉	- 59.9 dB - 6 Hz	– 49.7 dB – 13 Hz	Statistic Count	Marker
Slot Config Chann	190	0 112		Bursts out of Tolerance	Menus



Report No.: SZEM160100046801 Page: 33 of 252

3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH

	900 Modula	ation		P.D. MCS4 (%12) ↓ †††† Test M. A	Connect Control
[°] Max. Level: Auto +20	Low Noise Off Q :	PCL: / O	Channel ff 🔁: -	:661 Meas Slot : 3 Off Current	R Ext.Phase Err.GMSK
+10 +5					Appli- cation
+90////////////////////////////////////	www.h	mm	vww	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Analyzer Level _{Trg.}
-15 -20 0 20	40 60	80	100	Sym. 120 140	MS Signal
GSM 0 TS	C (correlation o.k.) Current	Average	Max / Min	- 0.15 Sym. Timing Advance Error	BS Signal
Phase Error Peak RMS Origin Offset	-2.6° 0.9° -53.2 dB	2.5 ° 0.8 ° -55.8 dB	4.1 ° 1.1 ° – 46.0 dB	28.7 dBm Avg. Burst Power (Cur.) 100 Bursts	Network
I/Q Imbalance	- 54.8 dB	– 58.1 dB	- 49.2 dB	Statistic Count	Marker
Frequency Err 😑 Cha	nnel	1 Hz	– 14 Hz	0.00 % Bursts out of Tolerance	
Slot Config Chann	661 el				Menus





Report No.: SZEM160100046801 Page: 34 of 252

3.2 For WCDMA

3.2.1 Test Band = WCDMA 850

3.2.1.1 Test Mode = WCDMA/TM1

3.2.1.1.1 Test Channel = MCH

🚯 WCDMA UE TX Measurement - V3.2.80 - Base V 3.2.71			WCDMA		
Multi Evaluation TPC Measurement PRACH UL Frequency: 836.4000000 MHz Ref. Level: 35.40 dBm Connector: RF1COM	Meas. Period: Full S		Multi Evaluation RUN		
UE Power dBm slot		Slot	RF Settings		
Phase Discontinuity		Slot	Trigger		
Error Vector Magnitude EVM vs Chip		Chip			
Phase Error vs Chip Phase Error vs Chip		Chip	Display		
Magnitude Error vs Chip	Chip IQ		Signaling Parameter		
HSDPA CM Circuit Switched: Power V HSDPA CM Call Established ON Sync: V					
Disconnect Test Mode	Send SMS	Inter/Intra- RAT	Config		



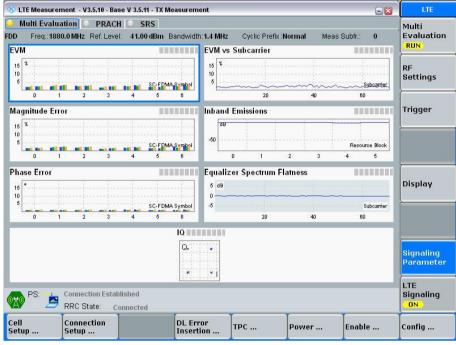
Report No.: SZEM160100046801 Page: 35 of 252

3.3 For LTE

3.3.1 Test Band = LTE Band 2

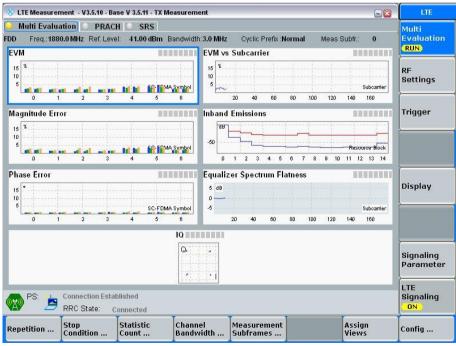
3.3.1.1 Test Mode = LTE/TM1 1.4MHz

3.3.1.1.1 Test Channel = MCH



3.3.1.2 Test Mode = LTE/TM1 3MHz

3.3.1.2.1 Test Channel = MCH





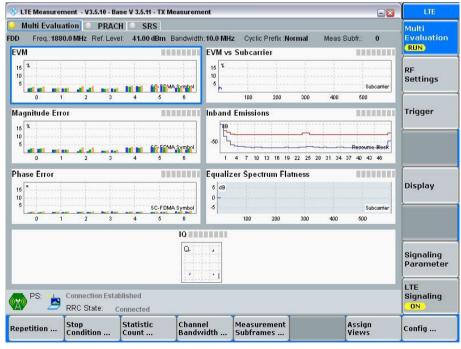
Report No.: SZEM160100046801 Page: 36 of 252

3.3.1.3 Test Mode = LTE/TM1 5MHz

3.3.1.3.1 Test Channel = MCH 🚯 LTE Measurement - V3.5.10 - Base V 3.5.11 - TX Measurement - 🛛 Multi Evaluation PRACH SRS Multi Freq.: 1880.0 MHz Ref. Level: 41.00 dBm Bandwidth: 5.0 MHz Cyclic Prefix : Normal Evaluation EDD Meas Subfr 0 RUN EVM EVM vs Subcarrier **法法法法法法** 15 10 5 15 10 Settings MASIMA Subcarrie 100 200 6 Triaaer **Magnitude** Error Inband Emissions 15 -50 A Symbol Diock 10.00 0 4 6 0 10 12 14 16 18 20 22 2 Phase Erro Equalizer Spectrum Flatness Display 5 dB 15 0 ~ -5 SC-FDMA Symbol 100 200 10 Q. . Signaling Parameter 1 5 LTE Connection Established Signaling RRC State: ON Connected Cell Setup . Connection Setup ... DL Error Insertion трс ... Power ... Enable ... Confia ...

3.3.1.4 Test Mode = LTE/TM1 10MHz

3.3.1.4.1 Test Channel = MCH

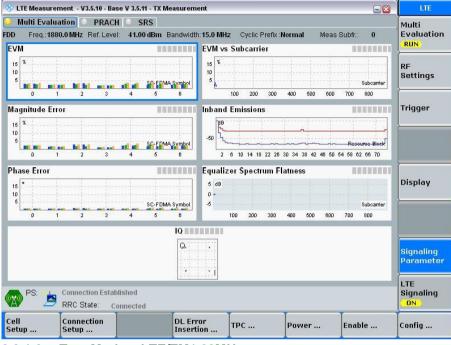




Report No.: SZEM160100046801 Page: 37 of 252

3.3.1.5 Test Mode = LTE/TM1 15MHz

3.3.1.5.1 Test Channel = MCH



3.3.1.6 Test Mode = LTE/TM1 20MHz

3.3.1.6.1 Test Channel = MCH

🚯 LTE Mea	surement - V3.5.10 - Base	v 3.5.11 - TX Measureme	ent			E X	LTE
	valuation PRACH 1.:1880.0 MHz Ref. Level:			Cyclic Prefi	x: Normal Me	as Subfr.: 0	Multi Evaluation RUN
15 ³ 10 5	ntat Miki atas	SI EDMA Symbol	15 [%] 10			Subcarrier	RF Settings
0 Magnitud 15 10 5	e Error	4 5 6	100 Inband E			00 900 1000 1100	Trigger
0 Phase Err 15 10 5	1 2 3 or 1 2 3	4 5 6	5 dB 0	14 20 26 32 r Spectrum 200 300 400		00 74 80 80 92 Subcarrier 00 900 1000 1100	Display
							Signaling Paramete
PS:	Connection Establi	ished nnected					LTE Signaling ON
-	Connection	DL Err	T		T	T	1

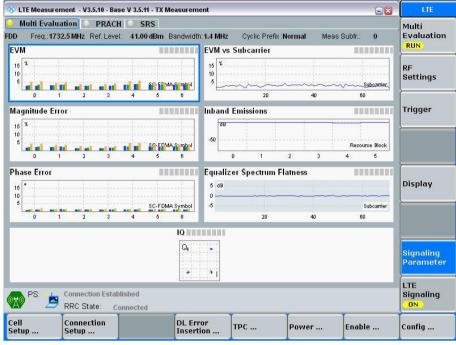


Report No.: SZEM160100046801 Page: 38 of 252

3.3.2 Test Band = LTE Band 4

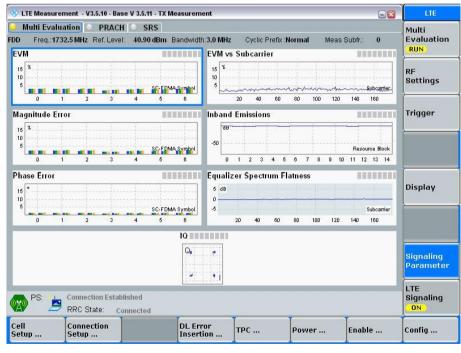
3.3.2.1 Test Mode = LTE/TM1 1.4MHz

3.3.2.1.1 Test Channel = MCH



3.3.2.2 Test Mode = LTE/TM1 3MHz

3.3.2.2.1 Test Channel = MCH

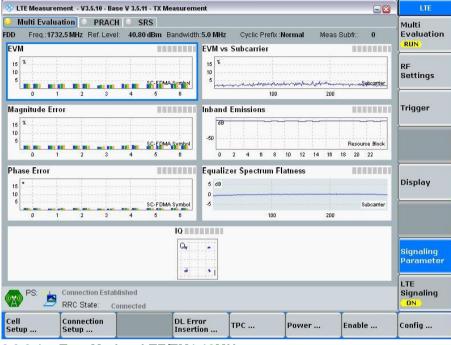




Report No.: SZEM160100046801 Page: 39 of 252

3.3.2.3 Test Mode = LTE/TM1 5MHz

3.3.2.3.1 Test Channel = MCH



3.3.2.4 Test Mode = LTE/TM1 10MHz

3.3.2.4.1 Test Channel = MCH

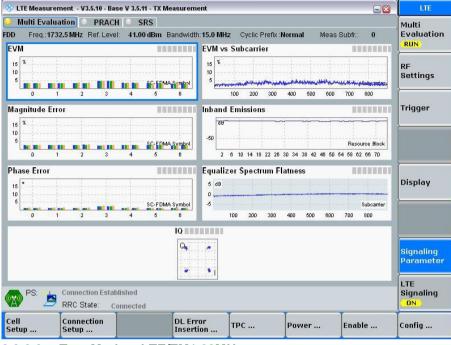
🐉 LTE Measuren	ment - V3.5.10 - Base V 3.5	.11 - TX Measurement			- 🛛	LTE
EVM			vs Subcarrier	(: Normal Mea:	s Subfr.: 0	Multi Evaluation RUN
	2 3 4	5 6) 300 400	and the second se	RF Settings
Magnitude Erro	0f 2 3 4	SC-FDMA Symbol	nd Emissions 19 1 4 7 10 13 16	19 22 25 28 31 3	Resource Block 4 37 40 43 46	Trigger
Phase Error	2 3 4	SC-FDMA Symbol -5	100 200		Subcarrier 500	Display
						Signaling Paramete
🔊 ^{PS:} 🛓	Connection Established RRC State: Connect	ed		•		LTE Signaling ON
Cell Setup	Connection Setup	DL Error Insertion	трс	Power	Enable	Config



Report No.: SZEM160100046801 Page: 40 of 252

3.3.2.5 Test Mode = LTE/TM1 15MHz

3.3.2.5.1 Test Channel = MCH



3.3.2.6 Test Mode = LTE/TM1 20MHz

3.3.2.6.1 Test Channel = MCH

🗞 LTE Meas	surement - V3.5.10 - Base V 3	5.11 - TX Measureme	nt			LTE
	ratuation PRACH : :1732.5 MHz Ref. Level: 4		20.0 MHz Cyclic Pret EVM vs Subcarrier 15 *	ix:Normal Mea	s Subfr.: 0	Multi Evaluation RUN
10 5 Magnitude	1 2 3 4		10 5	99 0-01-01-01-01-01-01-01 10 500 600 700 800	900 1000 1100	RF Settings Trigger
15 % 10 5 0	1 2 3 4	SC-EDMA Symbol 5 6	-50	2 38 44 50 56 62 6	Resource Block	
Phase Erro	97 1 2 3 4	SC-FDMA Symbol 5 6	Equalizer Spectrum		Subcarrier	Display
						Signaling Paramete
PS:	Connection Establishe		<u></u>			LTE Signaling ON
Cell Setup	Connection Setup	DL Erro Insertio		Power	Enable	Config

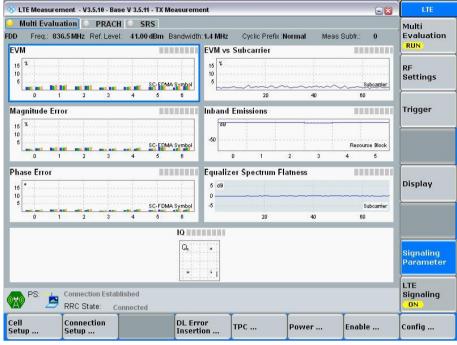


Report No.: SZEM160100046801 Page: 41 of 252

3.3.3 Test Band = LTE Band 5

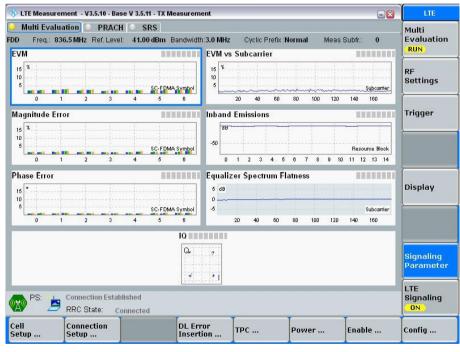
3.3.3.1 Test Mode = LTE/TM1 1.4MHz

3.3.3.1.1 Test Channel = MCH



3.3.3.2 Test Mode = LTE/TM1 3MHz

3.3.3.2.1 Test Channel = MCH





Report No.: SZEM160100046801 Page: 42 of 252

Test Mode = LTE/TM1 5MHz 3.3.3.3

3.3.3.3.1 Test Channel = MCH 🚯 LTE Measurement - V3.5.10 - Base V 3.5.11 - TX Measurement - 🛛 Multi Evaluation PRACH SRS Multi Freq.: 836.5 MHz Ref. Level: 41.00 dBm Bandwidth: 5.0 MHz Cyclic Prefix :Normal Evaluation FDD Meas Subfr.: 0 RUN **EVM** EVM vs Subcarrier **法法法法法法** 15 10 5 15 RF 10 Settings SC-FDMA Symbol Subcarrier 100 200 6 Triaaer **Magnitude** Error Inband Emissions 15 -50 Resource SC-FDMA Symbol 4 6 8 10 12 14 16 18 20 22 0 2 Phase Erro Equalizer Spectrum Flatness Display 5 dB 15 0 -5 Subcarrier SC-FDMA Symbol 100 200 IQ Q . Signaling Parameter -3 LTE Connection Established Signaling RRC State: ON Connected Cell Setup .. Connection Setup ... DL Error Insertion трс ... Power ... Enable ... Confia ...

3.3.3.4 Test Mode = LTE/TM1 10MHz

3.3.3.4.1 Test Channel = MCH

🚯 LTE I	Measurement - V3.5.10 - Bas	e V 3.5.11 - TX Measurement			- 2	LTE
	Iti Evaluation PRACH Freq.: 836.5 MHz Ref. Leve	: 41.00 dBm Bandwidth: 10	.0 MHz Cyclic Prefi /M vs Subcarrier	k: Normal Mea:	s Subfr.: 0	Multi Evaluation
15 [%] 10 5		SU-FUMA SVIIDO	0 5	4	Subcattler.	RF Settings
	0 1 2 3 tude Error		100 20 band Emissions	0 300 400	500	Trigger
Phase	D 1 2 3	SC-FDMA Symbol	jualizer Spectrum ⁵ dB 5		Subcarrier	Display
		10 Q.,		0 300 400	500	Signaling Parameter LTE
	T	onnected	1	1	T	Signaling ON
Cell	Connection Setup	DL Error	ТРС	Power	Enable	Config

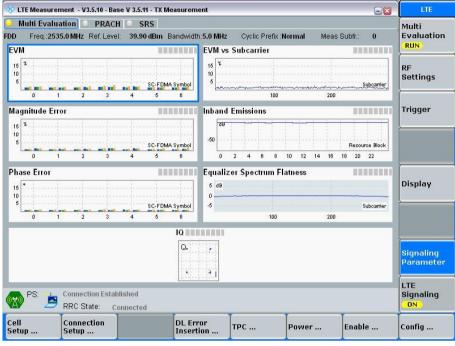


Report No.: SZEM160100046801 Page: 43 of 252

3.3.4 Test Band = LTE Band 7

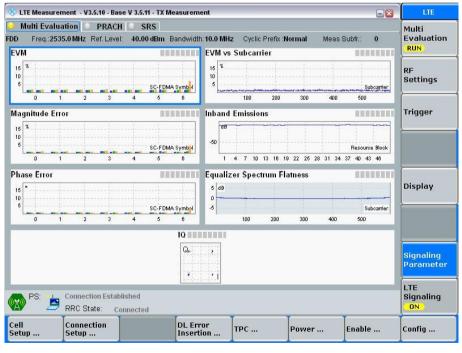
3.3.4.1 Test Mode = LTE/TM1 5MHz

3.3.4.1.1 Test Channel = MCH



3.3.4.2 Test Mode = LTE/TM1 10MHz

3.3.4.2.1 Test Channel = MCH







Report No.: SZEM160100046801 Page: 44 of 252

🚯 LTE Measurement - V3.5.10 - Base V 3.5.11 - TX Measurement - 🛛 Multi Evaluation PRACH SRS Multi Freq.:2535.0 MHz Ref. Level: 40.00 dBm Bandwidth: 15.0 MHz Cyclic Prefix: Normal Evaluation EDD Meas Subfr 0 RUN EVM EVM vs Subcarrier **法法法法法法** 15 15 10 5 RF 10 Settings SC-FDMA Symbol set and the little and has 100 200 300 400 500 600 700 800 5 6 Triager **Magnitude** Error Inband Emissions 15 -50 FDMA Symbol 6 2 6 10 14 18 22 26 30 34 38 42 46 50 54 58 62 66 70 5 Phase Error Equalizer Spectrum Flatness Display 5 dB 15 ۵ -5 Subcarrier SC-FDMA Symbol 100 200 400 500 600 700 800 IQ Q, * Signaling Parameter -+ LTE Connection Established Signaling RRC State: ON Connected Connection Setup ... DL Error Insertion Cell Setup .. трс ... Power ... Enable ... Confia ...

3.3.4.3 Test Mode = LTE/TM1 15MHz

3.3.4.3.1 Test Channel = MCH

3.3.4.4.1 Test Channel = MCH

Test Mode = LTE/TM1 20MHz

3.3.4.4

LTE Measurement - V3.5.1	0 - Base V 3.5.11 - TX Measuren	nent		S	LTE
	RACH SRS Level: 40.00 dBm Bandwidt	th:20.0 MHz Cyclic Prefix	:Normal Meas	s Subfr.: 0	Multi Evaluation RUN
16 10 5	SC-FDMA Symbol	15 10 5 		Subcarrier	RF Settings
0 1 2 Aagnitude Error 15 1	3 4 5 6	100 200 300 400 Inband Emissions	500 600 700 800	900 1000 1100	Trigger
0 1 2 Phase Error 16 0 1 2	3 4 6 6 SC-FDMA Symbol 3 4 5 6	2 8 14 20 26 32 Equalizer Spectrum I 5 dB 0 -5 100 200 300 400	38 44 50 56 62 66 Flatness 500 600 700 800	3 74 80 86 92	Display
om PS: 🕌 Connection			UUS UU UUU UUU UUU	300 100 110	Signaling Paramete LTE Signaling
ell Connectio Setup		ror tion	Power	Enable	ON Config



Report No.: SZEM160100046801 Page: 45 of 252

4 Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
		LCH	244.50	324.8	PASS
	GSM/TM1	MCH	245.60	315.6	PASS
GSM850		HCH	246.57	316.6	PASS
63101050		LCH	245.90	312.8	PASS
	GSM/TM2	MCH	247.25	310.7	PASS
		HCH	244.75	314.8	PASS
		LCH	244.18	319.2	PASS
	GSM/TM1	MCH	244.54	323.4	PASS
GSM1900		HCH	243.43	315.5	PASS
G3W1900		LCH	251.69	316.6	PASS
	GSM/TM2	MCH	247.84	312.3	PASS
		HCH	245.46	312.7	PASS

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
		LCH	4.2003	4.861	PASS
WCDMA850	UMTS/TM1	MCH	4.2046	4.850	PASS
		HCH	4.1944	4.863	PASS
	UMTS/TM1	LCH	4.1917	4.850	PASS
WCDMA1700		MCH	4.2008	4.843	PASS
		HCH	4.2117	4.871	PASS
		LCH	4.1971	4.856	PASS
WCDMA1900	UMTS/TM1	MCH	4.2091	4.867	PASS
		HCH	4.1990	4.848	PASS



Report No.: SZEM160100046801 Page: 46 of 252

	Page: 46 of 252					
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict	
		LCH	1.0980	1.271	PASS	
	LTE TM1/1.4MHz	MCH	1.0993	1.278	PASS	
		HCH	1.1058	1.270	PASS	
		LCH	1.1036	1.284	PASS	
	LTE TM2/1.4MHz	MCH	1.0995	1.264	PASS	
	11112, 11 111112	HCH	1.0985	1.270	PASS	
		LCH	2.6988	2.957	PASS	
	LTE TM1/ 3MHz	MCH	2.7054	2.958	PASS	
	Olvin 12	HCH	2.7023	2.961	PASS	
		LCH	2.6986	2.965	PASS	
	LTE TM2/ 3MHz	MCH	2.6968	2.966	PASS	
	Olvin 12	HCH	2.6933	2.962	PASS	
		LCH	4.5255	5.054	PASS	
	LTE TM1/ 5MHz	MCH	4.5197	5.049	PASS	
	510112	HCH	4.5358	5.071	PASS	
	LTE TM2/ 5MHz	LCH	4.5218	5.069	PASS	
		MCH	4.5485	5.086	PASS	
		HCH	4.5495	5.103	PASS	
LTE B2		LCH	8.9819	9.905	PASS	
	LTE TM1/ 10MHz	MCH	8.9782	9.903	PASS	
	1010112	HCH	8.9396	9.691	PASS	
		LCH	8.9769	9.807	PASS	
	LTE TM2/ 10MHz	MCH	8.9708	9.902	PASS	
	1010112	HCH	8.9446	9.833	PASS	
		LCH	13.508	14.83	PASS	
	LTE TM1/ 15MHz	MCH	13.430	14.73	PASS	
	1310112	HCH	13.415	14.71	PASS	
		LCH	13.490	14.79	PASS	
	LTE TM2/ 15MHz	MCH	13.477	14.71	PASS	
		HCH	13.421	14.70	PASS	
		LCH	17.963	19.27	PASS	
	LTE TM1/ 20MHz	MCH	17.915	19.39	PASS	
	20101112	HCH	17.893	19.49	PASS	
		LCH	17.986	19.54	PASS	
		MCH	17.925	19.47	PASS	
	20MHz	HCH	17.888	19.45	PASS	



Report No.: SZEM160100046801 Page: 47 of 252

	Page: 47 of 252					
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict	
		LCH	1.1005	1.280	PASS	
	LTE TM1/1.4MHz	MCH	1.1078	1.276	PASS	
		HCH	1.1015	1.306	PASS	
		LCH	1.0998	1.263	PASS	
	LTE TM2/1.4MHz	MCH	1.0998	1.273	PASS	
		HCH	1.1067	1.282	PASS	
		LCH	2.6972	2.954	PASS	
	LTE TM1/ 3MHz	MCH	2.7026	2.968	PASS	
		HCH	2.7041	2.966	PASS	
		LCH	2.6955	2.983	PASS	
	LTE TM2/ 3MHz	MCH	2.6952	2.959	PASS	
	Olvin 12	HCH	2.6930	2.968	PASS	
		LCH	4.5323	5.077	PASS	
	LTE TM1/ 5MHz	MCH	4.5271	5.100	PASS	
		HCH	4.5210	5.085	PASS	
	LTE TM2/ 5MHz	LCH	4.5161	5.065	PASS	
		MCH	4.5454	5.063	PASS	
		HCH	4.5386	5.104	PASS	
LTE B4		LCH	8.9594	9.883	PASS	
	LTE TM1/ 10MHz	MCH	8.9541	9.781	PASS	
	1010112	HCH	8.9537	9.888	PASS	
		LCH	8.9436	9.717	PASS	
	LTE TM2/ 10MHz	MCH	8.9736	9.862	PASS	
	1010112	HCH	8.9599	9.895	PASS	
		LCH	13.438	14.73	PASS	
	LTE TM1/ 15MHz	MCH	13.452	14.83	PASS	
	1310112	HCH	13.436	14.75	PASS	
		LCH	13.429	14.74	PASS	
	LTE TM2/ 15MHz	MCH	13.493	14.90	PASS	
		HCH	13.448	14.64	PASS	
		LCH	17.900	19.30	PASS	
	LTE TM1/ 20MHz	MCH	17.925	19.42	PASS	
	20101112	HCH	17.889	19.57	PASS	
		LCH	17.918	19.48	PASS	
	LTE TM2/	MCH	17.966	19.69	PASS	
	20MHz	HCH	17.886	19.39	PASS	



Report No.: SZEM160100046801 Page: 48 of 252

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
		LCH	1.0984	1.275	PASS
	LTE TM1/1.4MHz	MCH	1.1019	1.301	PASS
		HCH	1.1019	1.295	PASS
		LCH	1.0947	1.264	PASS
	LTE TM2/1.4MHz	MCH	1.1004	1.262	PASS
		HCH	1.1049	1.272	PASS
		LCH	2.6969	2.952	PASS
	LTE TM1/ 3MHz	MCH	2.7074	2.975	PASS
	510112	HCH	2.6998	2.964	PASS
	LTE TM2/ 3MHz	LCH	2.6995	3.000	PASS
		MCH	2.6945	2.958	PASS
LTE B5		HCH	2.6900	2.957	PASS
LIE DO		LCH	4.5399	5.098	PASS
	LTE TM1/ 5MHz	MCH	4.5284	5.094	PASS
	011112	HCH	4.5146	5.057	PASS
		LCH	4.5182	5.062	PASS
	LTE TM2/ 5MHz	MCH	4.5501	5.093	PASS
	011112	HCH	4.5424	5.108	PASS
		LCH	8.9772	9.899	PASS
	LTE TM1/ 10MHz	MCH	8.9772	9.902	PASS
		HCH	8.9737	9.804	PASS
		LCH	8.9640	9.769	PASS
	LTE TM2/ 10MHz	MCH	8.9928	9.892	PASS
		HCH	8.9576	9.893	PASS



Report No.: SZEM160100046801 Page: 49 of 252

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
		LCH	4.5347	5.092	PASS
	LTE TM1/5MHz	MCH	4.5229	5.083	PASS
		HCH	4.5156	5.081	PASS
		LCH	4.5193	5.061	PASS
	LTE TM2/5MHz	MCH	4.5310	5.053	PASS
	11112/011112	HCH	4.5386	5.097	PASS
	, , , ,	LCH	8.9738	9.967	PASS
	LTE TM1/ 10MHz	MCH	8.9556	9.806	PASS
	TOWITZ	HCH	8.9626	9.810	PASS
	LTE TM2/ 10MHz	LCH	8.9667	9.960	PASS
		MCH	8.9548	9.895	PASS
LTE B7		HCH	8.9608	9.875	PASS
LIE D/	, , , ,	LCH	13.489	14.86	PASS
	LTE TM1/ 15MHz	MCH	13.419	14.66	PASS
	1011112	HCH	13.451	14.79	PASS
		LCH	13.475	14.74	PASS
	LTE TM2/ 15MHz	MCH	13.457	14.75	PASS
	1011112	HCH	13.466	14.70	PASS
		LCH	17.934	19.37	PASS
	LTE TM1/ 20MHz	MCH	17.889	19.28	PASS
	2010112	HCH	17.972	19.67	PASS
		LCH	17.968	19.51	PASS
	LTE TM2/ 20MHz	MCH	17.915	19.53	PASS
	2011112	HCH	17.922	19.47	PASS



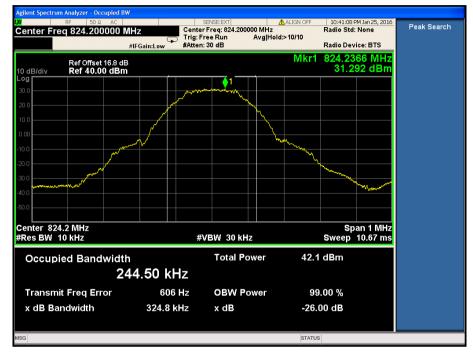
Report No.: SZEM160100046801 Page: 50 of 252

4.1 For GSM

4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH





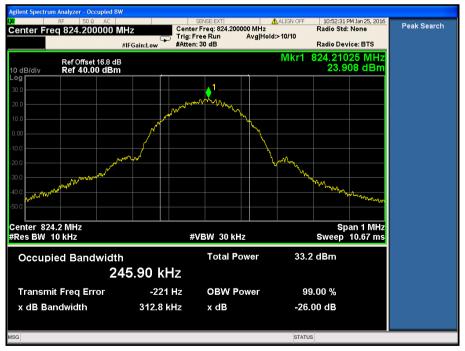
Report No.: SZEM160100046801 Page: 51 of 252

4.1.1.1.3 Test Channel = HCH



^{4.1.1.2} Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



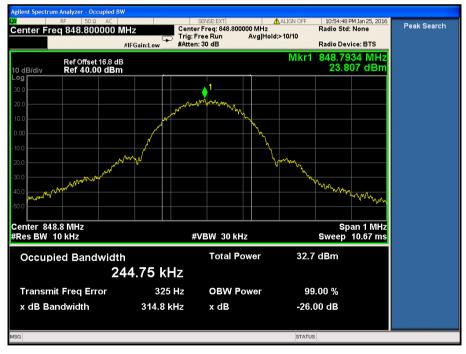


Report No.: SZEM160100046801 Page: 52 of 252

4.1.1.2.2 Test Channel = MCH



4.1.1.2.3 Test Channel = HCH





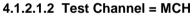
Report No.: SZEM160100046801 Page: 53 of 252

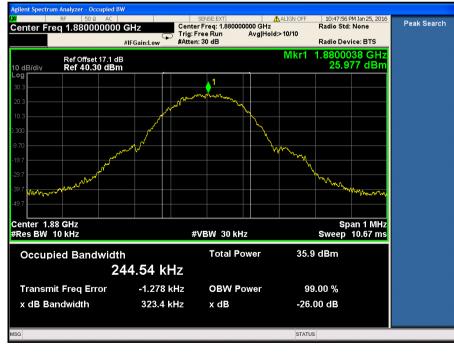
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH











Report No.: SZEM160100046801 Page: 54 of 252

4.1.2.1.3 Test Channel = HCH



4.1.2.2 Test Mode = GSM/TM2







Report No.: SZEM160100046801 Page: 55 of 252

4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH

