

Report No.: SZEM180400321702 Page: 1 of 33

Appendix B

LTE-M1 BAND 13



Report No.: SZEM180400321702 Page: 2 of 33

CONTENT

1	EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA	3
2	PEAK-TO-AVERAGE RATIO	4
	2.1 For LTE-M1	4
	2.1.1 Test Band = LTE-M1 BAND13	4
3	MODULATION CHARACTERISTICS	11
	3.1 For LTE-M1	11
	3.1.1 Test Band = LTE-M1 BAND13	11
4	BANDWIDTH	13
	4.1 For LTE	13
	4.1.1 Test Band = LTE-M1 BAND13	13
5	BAND EDGES COMPLIANCE	20
	5.1 For LTE-M1	20
	5.1.1 Test Band = LTE-M1 BAND13	20
6	SPURIOUS EMISSION AT ANTENNA TERMINAL	25
	6.1 For LTE-M1	25
	6.1.1 Test Band = LTE-M1 BAND13	25
7	FIELD STRENGTH OF SPURIOUS RADIATION	32
	7.1 For LTE-M1	32
	7.1.1 Test Band = LTE-M1 BAND13	32
8	FREQUENCY STABILITY	34
	8.1 FREQUENCY ERROR VS. VOLTAGE	34
	8.2 FREQUENCY ERROR VS. TEMPERATURE	35



Report No.: SZEM180400321702 Page: 3 of 33

1 Effective (Isotropic) Radiated Power Output Data

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
				RB1#0	23.06	20.11	34.77	PASS
			LCH	RB1#5	22.98	20.03	34.77	PASS
		5M		RB6#0	22.09	19.14	34.77	PASS
	LTE- M1/TM1		MCH	RB1#0	23.03	20.08	34.77	PASS
BAND13				RB1#5	23.07	20.12	34.77	PASS
				RB6#0	22.18	19.23	34.77	PASS
				RB1#0	22.93	19.98	34.77	PASS
			HCH	RB1#5	22.96	20.01	34.77	PASS
				RB6#0	21.99	19.04	34.77	PASS

Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE-M1 BAND13

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
				RB1#0	22.63	19.68	34.77	PASS
			LCH	RB1#5	22.65	19.7	34.77	PASS
		5M		RB6#0	21.1	18.15	34.77	PASS
			MCH	RB1#0	22.65	19.7	34.77	PASS
BAND13	LTE- M1/TM2			RB1#5	22.67	19.72	34.77	PASS
				RB6#0	21.11	18.16	34.77	PASS
				RB1#0	22.46	19.51	34.77	PASS
			HCH	RB1#5	22.49	19.54	34.77	PASS
				RB6#0	21.14	18.19	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
				RB1#0	23.06	20.11	34.77	PASS
BAND13	LTE- M1/TM1	LTE- 10M	MCH	RB1#5	23.25	20.3	34.77	PASS
				RB6#0	22.12	19.17	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
	LTE-	LTE- M1/TM2 10M	мсн	RB1#0	22.71	19.76	34.77	PASS
BAND13				RB1#5	22.63	19.68	34.77	PASS
				RB6#0	21.15	18.2	34.77	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



Report No.: SZEM180400321702 Page: 4 of 33

2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
		LCH	4.38	13	PASS
	TM1/5M Full RB	MCH	5.30	13	PASS
		HCH	4.43	13	PASS
	TM1/5M 1 RB	LCH	4.09	13	PASS
		MCH	4.03	13	PASS
BAND13		HCH	3.97	13	PASS
BAND 13	TM2/5M Full RB	LCH	5.25	13	PASS
		MCH	5.25	13	PASS
		HCH	5.57	13	PASS
	TM2/5M 1 RB	LCH	4.49	13	PASS
		MCH	4.87	13	PASS
		НСН	4.78	13	PASS

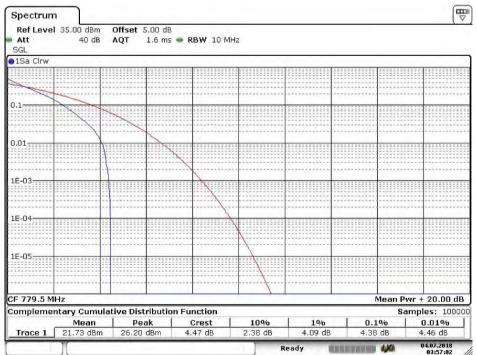
Part II - Test Plots

2.1 For LTE-M1

2.1.1 Test Band = LTE-M1 BAND13

2.1.1.1 Test Mode = LTE-M1/TM1.Bandwidth=5MHz Full RB

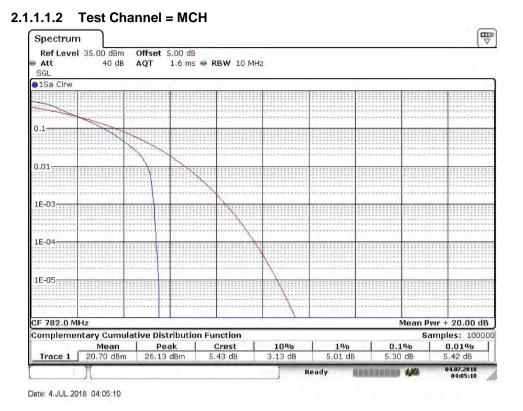
2.1.1.1.1 Test Channel = LCH



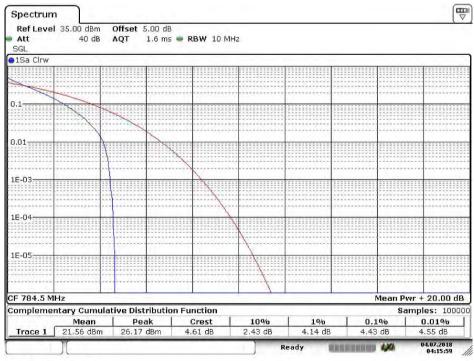
Date: 4.JUL.2018 03:57:03



Report No.: SZEM180400321702 Page: 5 of 33



2.1.1.1.3 Test Channel = HCH

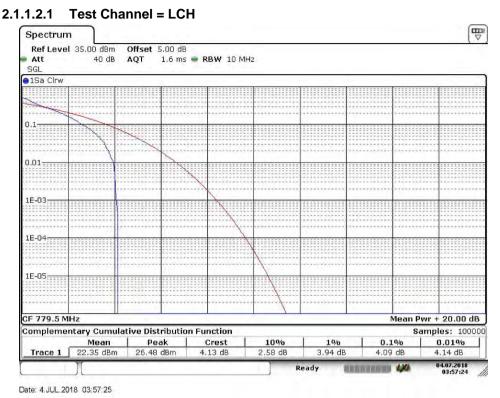


Date: 4.JUL.2018 04:15:59

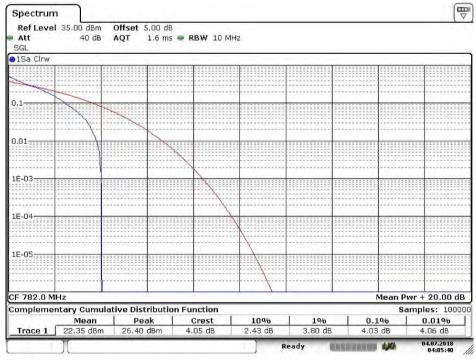


Report No.: SZEM180400321702 Page: 6 of 33

2.1.1.2 Test Mode = LTE-M1/TM1.Bandwidth=5MHz 1 RB



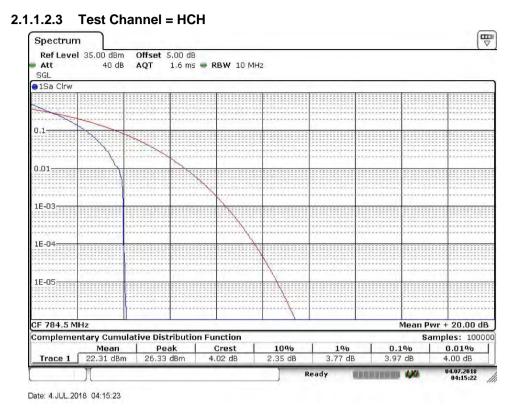
2.1.1.2.2 Test Channel = MCH



Date: 4.JUL.2018 04:05:41

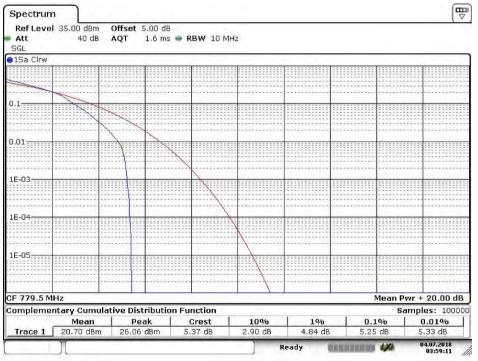


Report No.: SZEM180400321702 Page: 7 of 33



2.1.1.3 Test Mode = LTE-M1/TM2.Bandwidth=5MHz Full RB

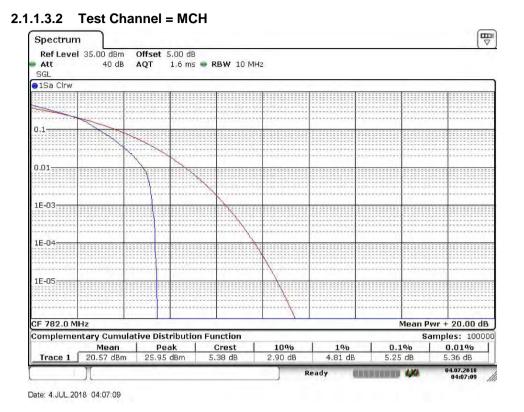
2.1.1.3.1 Test Channel = LCH



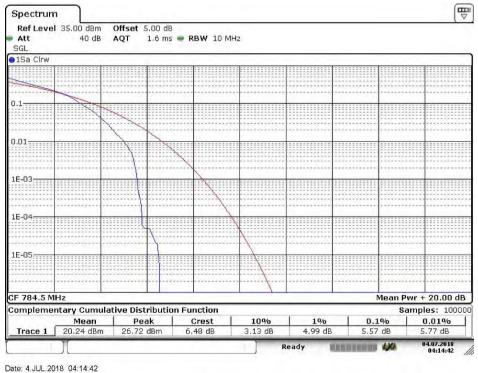
Date: 4.JUL.2018 03:59:11



Report No.: SZEM180400321702 Page: 8 of 33



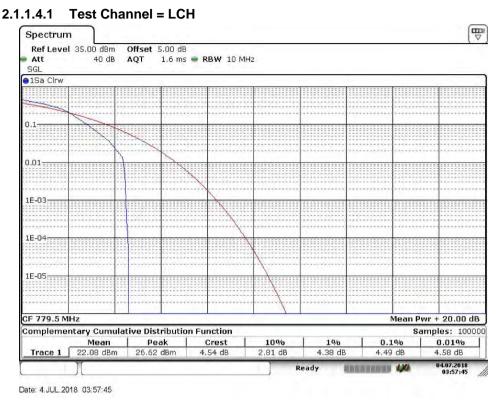
2.1.1.3.3 Test Channel = HCH



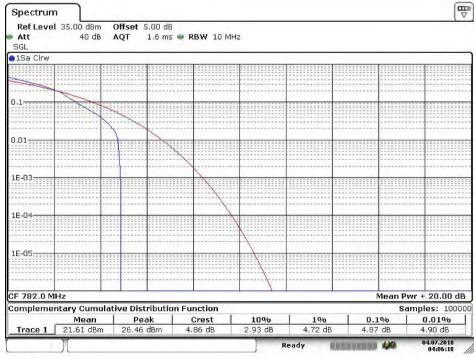


Report No.: SZEM180400321702 Page: 9 of 33

2.1.1.4 Test Mode = LTE-M1/TM2.Bandwidth=5MHz 1 RB



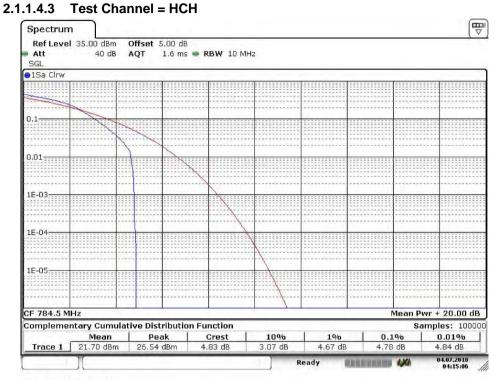
2.1.1.4.2 Test Channel = MCH



Date: 4.JUL.2018 04:06:18



Report No.: SZEM180400321702 Page: 10 of 33



Date: 4.JUL.2018 04:15:07



Report No.: SZEM180400321702 Page: 11 of 33

3 Modulation Characteristics

Part I - Test Plots

3.1 For LTE-M1

3.1.1 Test Band = LTE-M1 BAND13

3.1.1.1 Test Mode = LTE-M1 /TM1 5MHz

3.1.1.1.1 Test Channel = MCH

Phone2 LTE 40 TOYDER	~	Phone1 CAT-M1 30.70 #038	~	23230 ch		it Level 30.0 dBm put Level -60.2 dBm		of RB R ULRMC_RB er of RBs (Resource I	Blocks) allocated for the	✓ MT8821C 2018/07/23 11:14 RF Output : On
Common	0	₽ *	Q	Measurement	Signa	aling		UE	Power : 23.2 dBm	 Band Cal
Call Processing TX		IL RMC ber of RB	u	Fundamental Constel 0 Symb 1 0.7410			Meas. Count :		Main Screen Fundamental	Home < Preset
Measurement RX Measurement	Startin Max L	- IL Throughput	6 0 1 kbps						Sub Screen Constellation	Measuring
Fundamental Measurement	MCS I								Number of RB	Tx Rx Single
				Q —					Interpolation (Constellation)	Continuous
										Connected
Band						1				
Band Definition				EVM	Avg. 4,74	Max. 4.74	Min. 4.74 %(rms)	Limit		End Call
External				Peak Vector Error	23.04	23.04	23.04 %			
Loss				Carrier Leakage	-95.06	-95.06	-95.06 dBc		Contraction of the local division of the loc	
System Config									4 Views	< Menu



Report No.: SZEM180400321702 Page: 12 of 33

UL Channel TPC Pattern 23230 ch UL RMC - MCS Index 🛚 ULIMCS **∕**1 MT8821C Input Level Phone1 This sets MCS Index for the uplink signal. When setting MCS Index, changes to the modulation scheme and TBS Index setting Operation Band Channel Bandwidth Output Level RF Output : On 0 0.2 dBm . UE Power : 22.2 dBm Q Measurement Signaling S ⇒ ★ A Home UL RMC Fundamental > Constellation Call Processing Fundamental 0 Symbol I -0.2742 Q 0.3395 Number of RB Meas. Count : < Preset Sub Screen Measurement Starting RB Constellation Measuring... Max UL Throughput Measurement Tx = MCS Index 11 16QAM 10 1032 Number of RB Fundamental Measurement •-+ Starting RB > DL RMC Single Q Continuous lation (Const Start Call Min. 4.47 %(rms) End Call Max. Limit Definition EVM 4.47 4.47 Peak Vector Error 18.48 18.48 18.48 % -82.39 -82.39 dBc Carrier Leakage -82.39 Loss 4 Views Config

3.1.1.2 Test Mode = LTE-M1 /TM2 5MHz 3.1.1.2.1 Test Channel = MCH



Report No.: SZEM180400321702 Page: 13 of 33

4 Bandwidth

Part I - Test Results

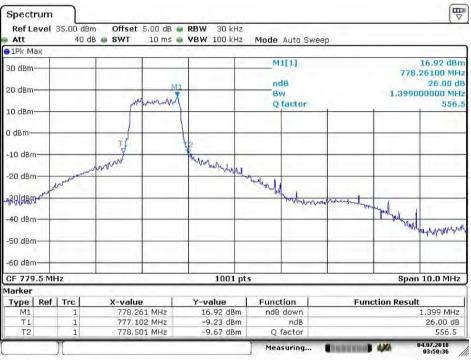
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
		LCH	1.10	1.39	PASS
	TM1/ 5MHz	MCH	1.10	1.41	PASS
		HCH	1.10	1.42	PASS
BAND13	TM2/ 5MHz	LCH	1.11	1.49	PASS
		MCH	1.11	1.49	PASS
		HCH	1.11	1.48	PASS

4.1 For LTE

4.1.1 Test Band = LTE-M1 BAND13

4.1.1.1 Test Mode = LTE-M1/TM1 5MHz

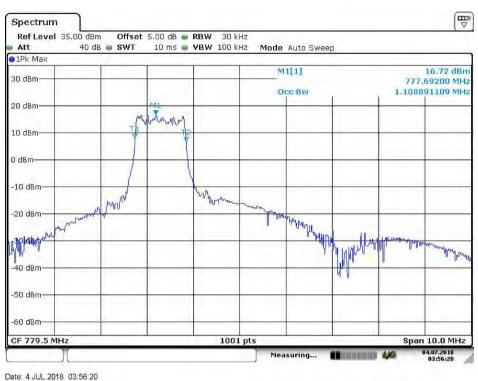
4.1.1.1.1 Test Channel = LCH



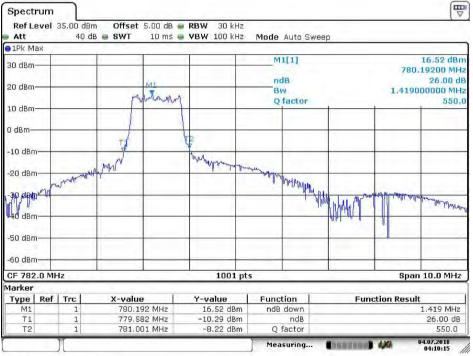
Date: 4.JUL.2018 03:50:37



Report No.: SZEM180400321702 Page: 14 of 33



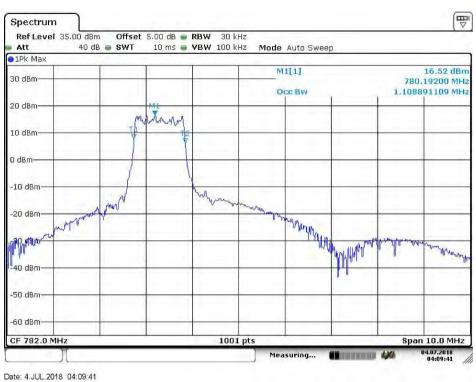
4.1.1.1.2 Test Channel = MCH



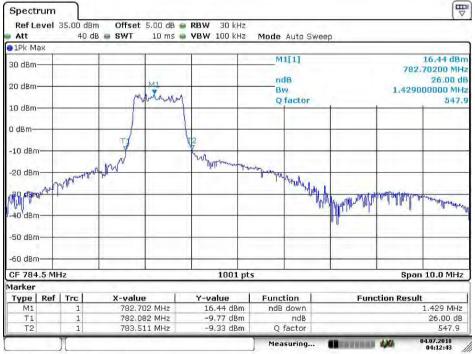
Date: 4.JUL.2018 04:10:15



Report No.: SZEM180400321702 Page: 15 of 33



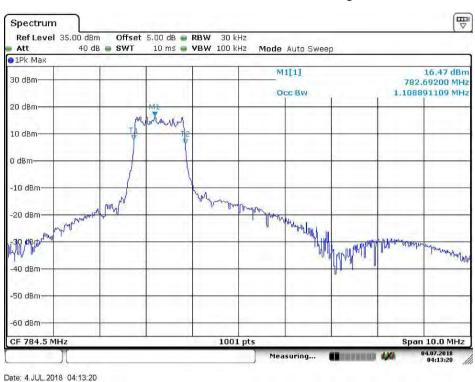
4.1.1.1.3 Test Channel = HCH



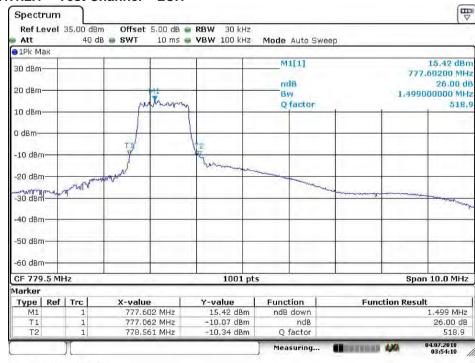
Date: 4.JUL.2018 04:12:43



Report No.: SZEM180400321702 Page: 16 of 33



4.1.1.2 Test Mode = LTE-M1/TM2 5MHz

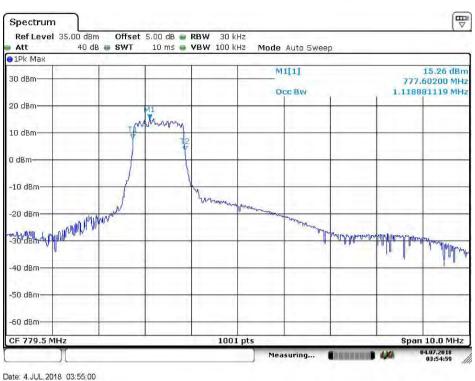


4.1.1.2.1 Test Channel = LCH

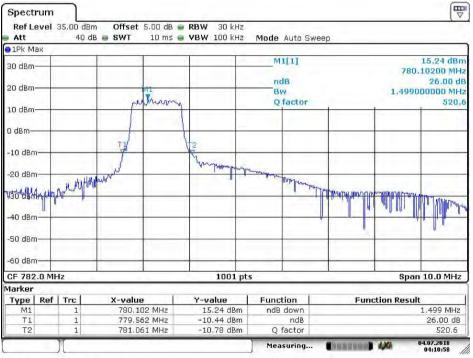
Date: 4.JUL.2018 03:54:10



Report No.: SZEM180400321702 Page: 17 of 33



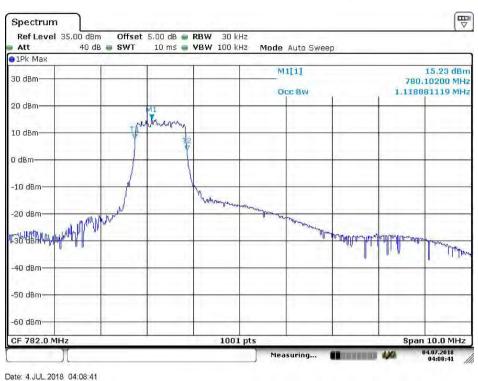
4.1.1.2.2 Test Channel = MCH



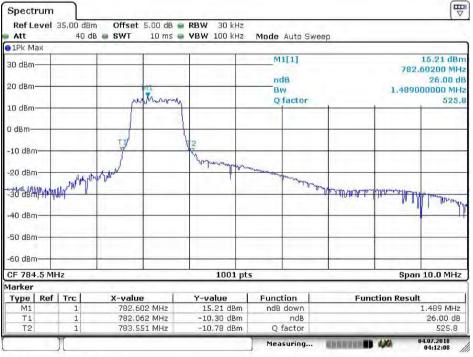
Date: 4.JUL.2018 04:10:58



Report No.: SZEM180400321702 Page: 18 of 33



4.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 04:12:08



Report No.: SZEM180400321702 Page: 19 of 33



Date: 4.JUL.2018 04:14:11



Report No.: SZEM180400321702 Page: 20 of 33

5 Band Edges Compliance

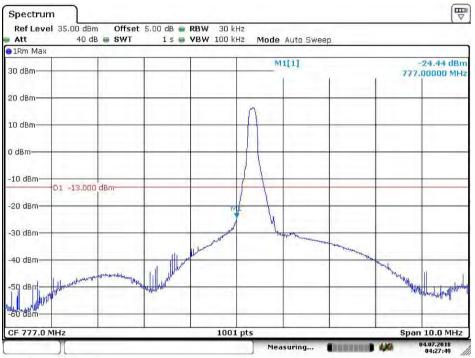
5.1 For LTE-M1

5.1.1 Test Band = LTE-M1 BAND13

5.1.1.1 Test Mode = LTE-M1/TM1 5MHz

5.1.1.1.1 Test Channel = LCH

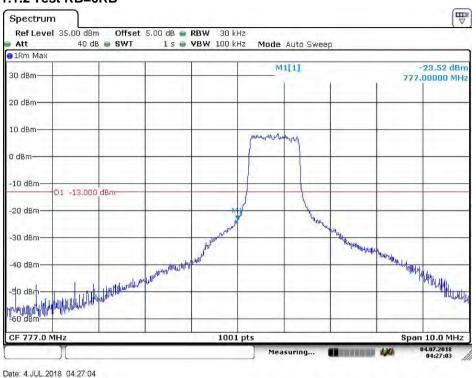
5.1.1.1.1.1 Test RB=1RB



Date: 4.JUL.2018 04:27:49



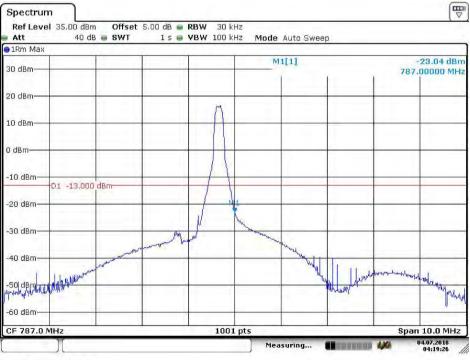
Report No.: SZEM180400321702 Page: 21 of 33



5.1.1.1.1.2 Test RB=6RB

5.1.1.1.2 Test Channel = HCH

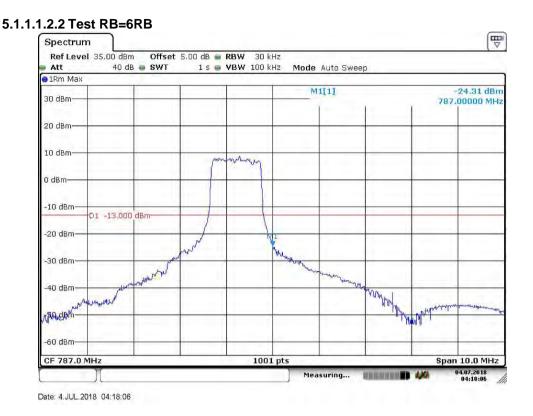
5.1.1.1.2.1 Test RB=1RB



Date: 4.JUL.2018 04:19:26

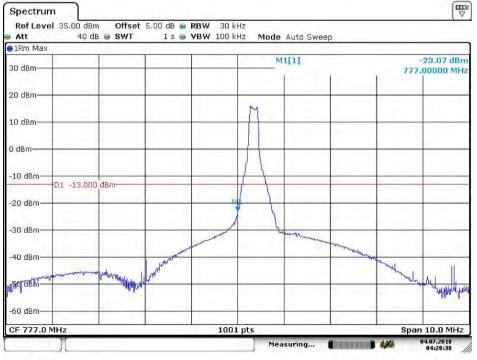


Report No.: SZEM180400321702 Page: 22 of 33



5.1.1.1.3 Test Channel = LCH

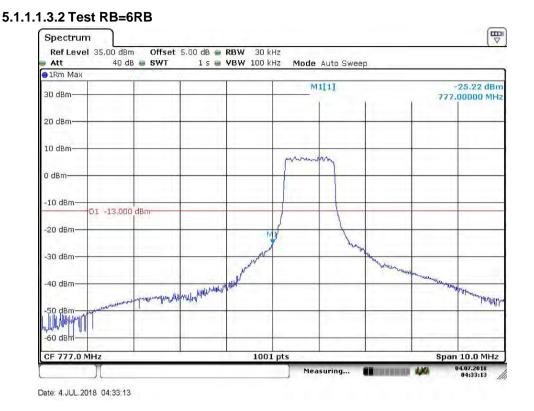
5.1.1.1.3.1 Test RB=1RB



Date: 4.JUL.2018 04:28:38

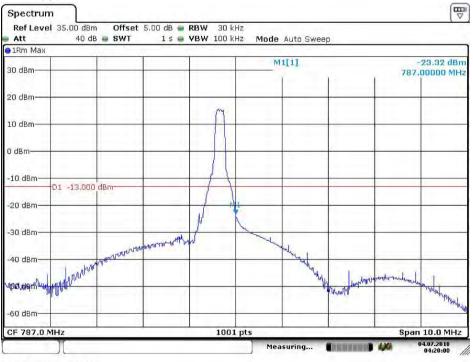


Report No.: SZEM180400321702 Page: 23 of 33



5.1.1.1.4 Test Channel = HCH

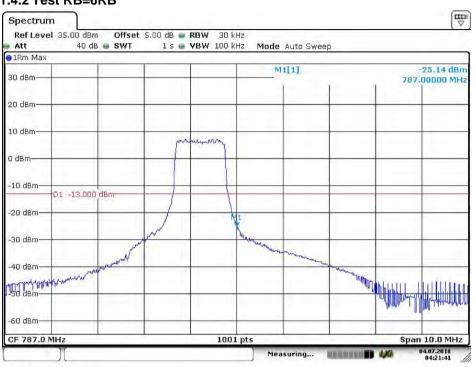
5.1.1.1.4.1 Test RB=1RB



Date: 4.JUL.2018 04:20:00



Report No.: SZEM180400321702 Page: 24 of 33



Date: 4.JUL.2018 04:21:40

"This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx Attention is for a field three in and jurisdiction issues defined three in. Any holder of this document is advised that information contained hereon reflects the Company's findings at their 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 is enpoduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or fails/fication 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 30 days only.

5.1.1.1.4.2 Test RB=6RB



Report No.: SZEM180400321702 Page: 25 of 33

6 Spurious Emission at Antenna Terminal

NOTE1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

NOTE2: only the worst case data displayed in this report.

Part I - Test Plots

6.1 For LTE-M1

6.1.1 Test Band = LTE-M1 BAND13

6.1.1.1 Test Mode = LTE-M1 / TM1 5MHz RB1#0 6.1.1.1.1 Test Channel = LCH

Spectrum Ref Level 35.00 dBm Offset 5.00 dB Mode Auto Sweep 01 AvgPw 30 dbitpit c INE ABS 20 dBm-PURIOUS DA 10 dBm 0 d8m -10 dBm-LINE ABS SPURIOU -30 dBm-40 dBm -50 dBm-60 dBm-Start 30.0 MHz 68010 pts Stop 8.0 GHz Spurious Emissions Range Low Range Up RBW **Power Abs ALimit** Frequency MHz 0.000 MHz 756.44031 MHz 774.34665 MHz -53.22 dBm 40.22 dB 100.000 kHz 775.000 MHz 763.000 MHz 6.250 kHz -12.84 dB 100.000 kHz 775.000 MHz 776.000 MHz 775.01648 MHz -43.12 dBm -30.12 dB 788.000 MHz 776.000 MHz 100.000 kHz 777.37263 MHz 16.87 dBm -13.13 dB 788,000 MHz 793.000 MHz 100.000 kHz 788.07374 MHz -51.22 dBm -38.22 dB 793.000 MHz 805.000 MHz 799.67133 MHz -65.61 dBm -30.61 dB 6.250 kHz 805.000 MHz 1.000 GHz 100.000 kHz 975.94156 MHz -54.78 dBm -41.78 dB 1.000 GHz 1.559 GHz 1.000 MHz 1.000 MHz 1.55461 GHz -45.27 dBm -32,27 dB -46.54 dBm -6.54 dB 1.559 GHz 1.610 GHz 1.57151 GHz 1.610 GHz 8.000 GHz 1.000 MHz 6.87110 GHz -38.67 dBm -25.67 dB STREET, NO. 08.08.2018 Measuring...

Date: 8.AUG.2018 09:41:59



Report No.: SZEM180400321702 26 of 33 Page:

6.1.1.1.2 Test Channel = MCH

1 AvgPwr					
		PARS	r i	1 1	1
30 dbittuit abark	and the state				
Line SPURIO	OUS_LINE_ABS_	PASS			
10 dBm-		T			
					11
0 d8m	-				
-10 dBm				_	
SPURIOUS LINE	ABS_				
-30 dBm					_
-40 dBm	-				
-50 d8m			and the second sec	No. of the second s	
COD CIBIN					
-60 dBm-				-	-
Start 30.0 MHz		6801	0 pts		Stop 8.0 GHz
purious Emissio	ns	and the second second	the second second	the second s	
Range Low	Range Up	RBW	Frequency	Power Abs	۵Limit
30.000 MHz	763.000 MHz	100.000 kHz	192.37991 MHz	-53.25 dBm	-40,25 dB
763.000 MHz	775.000 MHz	6.250 kHz	774.63437 MHz	-58.44 dBm	-23.44 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.12038 MHz	-52.00 dBm	~39.00 dB
776.000 MHz	788.000 MHz	100.000 kHz	779.81818 MHz	14.57 dBm	-15,43 dB
788.000 MHz	793.000 MHz	100.000 kHz	788.32922 MHz	-45.40 dBm	-32.40 dB
793.000 MHz	805.000 MHz	6.250 kHz	802.05694 MHz	-65,34 dBm	-30.34 dB
805.000 MHz	1.000 GHz	100.000 kHz	958.60390 MHz	-54.76 dBm	-41.76 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.45417 GHz	-45.69 dBm	-32.69 dB
1,559 GHz	1.610 GHz	1.000 MHz	1.55979 GHz	-45.78 dBm	~5.78 dB
1.610 GHz	8.000 GHz	1,000 MHz	6.89886 GHz	-38.89 dBm	-25.89 dB
T			Measuring	**************************************	08.08.2018 09:43:29

6.1.1.1.3 Test Channel = HCH

Ref Level 35.00 d	Bm Offset 5.00 c	B Mode Al	ito Sweep		T T
1 AvgPwr		D HOUS NO	ne oneep		
30 dbittuit Chark		PARS	· · · · · · · · · · · · · · · · · · ·		
Line_\$PURIO	JS_LINE_ABS_	PASS			
10 dBm					-
0 d8m-					-
-10 dBm SPURIOUS LINE_AB	s_				
-30 dBm					-
-40 dBm	-				-
-50 dBm					
-60 d8m-		-		-	_
Start 30.0 MHz		6801	0 pts		Stop 8.0 GHz
Spurious Emission		-			
Range Low	Range Up	RBW	Frequency	Power Abs	۵Limit
30.000 MHz	763.000 MHz	100.000 kHz	311.11404 MHz	-52.73 dBm	-39.73 dB
763.000 MHz	775.000 MHz	6.250 kHz	763.59341 MHz	-61.84 d8m	-26.84 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.12837 MHz	~54.60 dBm	-41.60 dB
776.000 MHz	788.000 MHz	100.000 kHz	782.31169 MHz	16.46 dBm	-13.54 dB
788.000 MHz	793.000 MHz	100.000 kHz	789.13164 MHz	-40.48 dBm	-27.48 dB
793.000 MHz	805.000 MHz	6.250 kHz	794.12088 MHz	-64.65 dBm	-29.65 dE
805.000 MHz	1.000 GHz	100.000 kHz	926.85065 MHz	-54.71 dBm	-41.71 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.48838 GHz	-45.85 dBm	-32.85 dB
1,559 GHz	1.610 GHz	1.000 MHz	1.56432 GHz	-46.22 dBm	-6.22 dB
1.610 GHz	8.000 GHz	1,000 MHz	6.82597 GHz	-38.86 dBm	-25.86 dB
1			Measuring	CRAMMER AND	08.08.2018 09:46:28

"This document is issued by the Company subject to its General Conditions of Service printed overleaf,-available on request or accessible at http://www.sqs.com/en/Terms-and-Conditions.aspx and, This document is issued by the Company subject to this observed printed overlear, available on request or accessible at <u>http://www.sgs.com/en/ terms-and-contions.aspx</u> and, for electronic format documents, subject to Terms and Conditions. for electronic Documents, subject to Terms and Conditions for Electronic Documents at <u>http://www.sgs.com/en/ terms-and-conditions/Terms-and-Condi</u>



Report No.: SZEM180400321702 27 of 33 Page:

6.1.1.2 Test Mode = LTE-M1 / TM2 5MHz RB1#0

6.1.1.2.1 Test Channel = LCH

Ref Level 35.00 d	Bm Offset 5.00 c	B Mode Au	to Sweep		
1 AvgPwr		PASS	-	1 1	
30 dbitmit (thank	in the test				
20 dBm	JS_LINE_ABS_	PASS		-	
10 dBm				+ +	
0 d8m		-		-	-
-10 dBm					_
-20 BER -20 BER	<u>s</u>				_
-30 dBm					
-40 dBm	a harmon har				-
-50 dBm	and the second diamond				
-60 d8m		-			
Start 30.0 MHz	1	68010) pts	1 1	Stop 8.0 GHz
Spurious Emission	s				
Range Low	Range Up	RBW	Frequency	Power Abs	۵Limit
30.000 MHz	763.000 MHz	100.000 kHz	343.65598 MHz	-52.65 dBm	-39.65 dB
763.000 MHz	775.000 MHz	6.250 kHz	774.67033 MHz	-51.83 dBm	-16.83 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.93856 MHz	-41.18 dBm	-28.18 dB
776.000 MHz	788.000 MHz	100.000 kHz	777.37263 MHz	16.25 dBm	-13.75 dB
788.000 MHz	793.000 MHz	100.000 kHz	788.83267 MHz	-49.13 dBm	-36.13 dB
793.000 MHz	805.000 MHz	6.250 kHz	798.90410 MHz	-65.57 dBm	-30.57 dB
805.000 MHz	1.000 GHz	100.000 kHz	997.17532 MHz	-54,66 dBm	-41.66 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.55461 GHz	-45.24 dBm	-32.24 dB
1,559 GHz	1.610 GHz	1.000 MHz	1.60682 GHz	-46.54 dBm	-6.54 dB
1.610 GHz	8.000 GHz	1.000 MHz	6.94039 GHz	-39.13 dBm	-26.13 dB
			Measuring	**************************************	08.08.2018

6.1.1.2.2 Test Channel = MCH

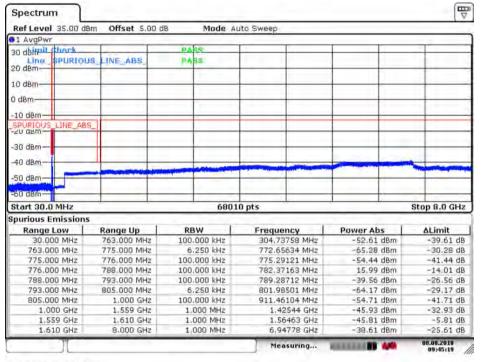
Ref Level 35.00	dBm Offset 5.00	dB M	de Au	to Sweep	_				
1 AvgPwr		-							
30 dbitmit aback		PARS	-	-		-			
20 dBm	US_LINE_ABS_	PASS							
20 dBm			-				1		
10 dBm	-		-		-	-	-		
0 d8m									
e dem					-				
-10 dBm			-		-	-	-	_	
SPURIOUS LINE A	BS_					-	-		
						-	-		
-30 dBm							-		
-40 dBm	-			and the second se			d and a		
-50 dBm		and the second se	-	the second	10 A.				
-30 UBIII							1		
-60 dBm				_		-	-	_	
Start 30.0 MHz			68010) pts			-	Stop 8.0 GHz	
Spurious Emissio	ns								
Range Low	Range Up	RBW	1	Freque	ncy	Power Abs		ALimit	
30.000 MHz	763.000 MHz	100.000	kHz	319.39	611 MHz	-52.90	-52.90 dBm		
763.000 MHz	775.000 MHz	6.250	kHz	774.86214 MHz		-57.90 dBm		-22.90 dB	
775.000 MHz	776.000 MHz	100.000			546 MHz	-51.55 dBm		~38.55 dB	
776.000 MHz	788.000 MHz	100.000			613 MHz	14.36		-15.64 dB	
788.000 MHz	793.000 MHz	100.000	01.10		266 MHz	-41.51		-28.51 dB	
793.000 MHz	805.000 MHz	6.250			151 MHz	-65.07		-30.07 dB	
805.000 MHz	1.000 GHz	100.000			481 MHz	-54.75		-41.75 dB	
1.000 GHz	1.559 GHz	1.000 1			1979 GHz	-45.96		+32.96 dB	
1,559 GHz 1,610 GHz	1.610 GHz 8.000 GHz	1.000 1			5974 GHz 3252 GHz	-45.92		-5.92 dB -25.84 dB	
1,010 0H2	0.000 302	1,0001	144	-			apin	08.08.2018	
2010					suring	TAXABLE IN CONTRACTOR OF CONTA	-		

This document is issued by the Company subject to its General Conditions of Service printed overleaf,-available on request or accessible at http://www.sqs.com/en/Terms-and-Conditions.aspx and, This document is issued by the Company subject to this observed printed overlear, available on request or accessible at <u>http://www.sgs.com/en/ terms-and-contions.aspx</u> and, for electronic format documents, subject to Terms and Conditions. for electronic Documents, subject to Terms and Conditions for Electronic Documents at <u>http://www.sgs.com/en/ terms-and-conditions/Terms-and-Condi</u>



Report No.: SZEM180400321702 Page: 28 of 33

6.1.1.2.3 Test Channel = HCH



Date: 8 AUG 2018 09:45:19



Report No.: SZEM180400321702 Page: 29 of 33

7 Field Strength of Spurious Radiation

7.1 For LTE-M1

7.1.1 Test Band = LTE-M1 BAND13

7.1.1.1 Test Mode =LTE-M1/TM1 5MHz RB1#0

7.1.1.1.1 Test Channel = LCH							
Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization			
63.693333	-82.27	-13.00	-69.27	Vertical			
90.480000	-84.74	-13.00	-71.74	Vertical			
1554.500000	-53.20	-13.00	-40.20	Vertical			
2332.000000	-59.12	-13.00	-46.12	Vertical			
3109.200000	-67.75	-13.00	-54.75	Vertical			
6486.112500	-65.23	-13.00	-52.23	Vertical			
63.553333	-78.21	-13.00	-65.21	Horizontal			
104.293333	-84.38	-13.00	-71.38	Horizontal			
1554.500000	-52.64	-13.00	-39.64	Horizontal			
2332.500000	-58.92	-13.00	-45.92	Horizontal			
3109.200000	-65.06	-13.00	-52.06	Horizontal			
7451.362500	-66.14	-13.00	-53.14	Horizontal			

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization			
63.693333	-81.51	-13.00	-68.51	Vertical			
104.246667	-83.92	-13.00	-70.92	Vertical			
1559.500000	-54.36	-40.00	-14.36	Vertical			
2339.000000	-58.22	-13.00	-45.22	Vertical			
4298.212500	-67.09	-13.00	-54.09	Vertical			
7919.850000	-63.99	-13.00	-50.99	Vertical			
57.113333	-77.57	-13.00	-64.57	Horizontal			
104.293333	-84.75	-13.00	-71.75	Horizontal			
1560.000000	-50.80	-40.00	-10.80	Horizontal			
2339.500000	-53.22	-13.00	-40.22	Horizontal			
3118.950000	-65.09	-13.00	-52.09	Horizontal			
7034.550000	-65.23	-13.00	-52.23	Horizontal			



Report No.: SZEM180400321702 Page: 30 of 33

7.1.1.1.3	Test Channel = HC	Н		
Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
63.880000	-82.02	-13.00	-69.02	Vertical
104.246667	-85.19	-13.00	-72.19	Vertical
1565.000000	-54.61	-40.00	-14.61	Vertical
2347.000000	-59.20	-13.00	-46.20	Vertical
3129.187500	-67.68	-13.00	-54.68	Vertical
6486.600000	-65.26	-13.00	-52.26	Vertical
62.433333	-77.72	-13.00	-64.72	Horizontal
104.293333	-85.03	-13.00	-72.03	Horizontal
1564.500000	-50.78	-40.00	-10.78	Horizontal
2346.500000	-57.13	-13.00	-44.13	Horizontal
3129.675000	-67.45	-13.00	-54.45	Horizontal
7051.612500	-65.22	-13.00	-52.22	Horizontal

NOTE:

1) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

2) We have tested all modulation and all bandwidth, but only the worst case data presented in this report.



Report No.: SZEM180400321702 Page: 31 of 33

8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		LCH	TN	VL	-13.81	-0.017711	PASS
				VN	8.77	0.011255	PASS
				VH	3.89	0.004992	PASS
			TN	VL	-0.63	-0.000803	PASS
	LTE-M1/TM1 5MHz	MCH		VN	-8.99	-0.011493	PASS
				VH	-9.38	-0.011997	PASS
		НСН	TN	VL	0.38	0.000490	PASS
				VN	-0.35	-0.000443	PASS
LTE-M1				VH	-3.82	-0.004872	PASS
BAND13	LTE-M1/TM2 5MHz	LCH	TN	VL	4.56	0.005845	PASS
				VN	1.54	0.001978	PASS
				VH	-6.47	-0.008306	PASS
		МСН	TN	VL	6.67	0.008530	PASS
				VN	-7.23	-0.009247	PASS
				VH	7.01	0.008963	PASS
		HCH TN	TN	VL	5.69	0.007256	PASS
				VN	-2.49	-0.003168	PASS
				VH	1.70	0.002170	PASS



Report No.: SZEM180400321702 Page: 32 of 33

8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict		
				-30	-3.32	-0.004261	PASS		
				-20	1.48	0.001905	PASS		
						-10	-3.11	-0.003986	PASS
			VN	0	-6.58	-0.008447	PASS		
		LCH		10	1.12	0.001434	PASS		
				20	-7.66	-0.009822	PASS		
				30	-3.43	-0.004396	PASS		
				40	-6.51	-0.008354	PASS		
	LTE-M1/TM1 5MHz			50	0.56	0.000721	PASS		
			VN	-30	-0.04	-0.000049	PASS		
		МСН		-20	2.49	0.003178	PASS		
				-10	-0.86	-0.001101	PASS		
LTE-M1				0	9.97	0.012744	PASS		
BAND13				10	-3.33	-0.004253	PASS		
				20	-0.68	-0.000872	PASS		
				30	2.61	0.003332	PASS		
				40	4.46	0.005705	PASS		
				50	9.00	0.011511	PASS		
				-30	-2.52	-0.003212	PASS		
				-20	-2.30	-0.002937	PASS		
				-10	-2.88	-0.003673	PASS		
				0	-5.00	-0.006375	PASS		
		НСН	VN	10	2.69	0.003433	PASS		
				20	9.29	0.011840	PASS		
				30	3.10	0.003949	PASS		
				40	2.45	0.003117	PASS		
				50	-5.04	-0.006422	PASS		



Report No.: SZEM180400321702 Page: 33 of 33

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			VN	-30	-0.98	-0.001261	PASS
				-20	4.57	0.005858	PASS
				-10	-2.68	-0.003437	PASS
				0	-8.96	-0.011501	PASS
		LCH		10	1.43	0.001834	PASS
				20	6.54	0.008386	PASS
				30	-2.27	-0.002914	PASS
				40	0.56	0.000717	PASS
				50	4.88	0.006263	PASS
	LTE-M1/TM2 5MHz		VN	-30	7.50	0.009592	PASS
				-20	-9.97	-0.012754	PASS
		МСН		-10	-8.08	-0.010339	PASS
LTE-M1				0	8.28	0.010584	PASS
BAND13				10	4.56	0.005835	PASS
				20	-0.39	-0.000503	PASS
				30	-3.50	-0.004470	PASS
				40	-3.84	-0.004917	PASS
				50	3.56	0.004552	PASS
				-30	-8.87	-0.011306	PASS
				-20	-6.30	-0.008025	PASS
				-10	0.22	0.000279	PASS
				0	-0.99	-0.001259	PASS
		НСН	VN	10	0.77	0.000983	PASS
				20	4.44	0.005659	PASS
				30	1.39	0.001770	PASS
				40	6.38	0.008131	PASS
				50	-0.12	-0.000148	PASS