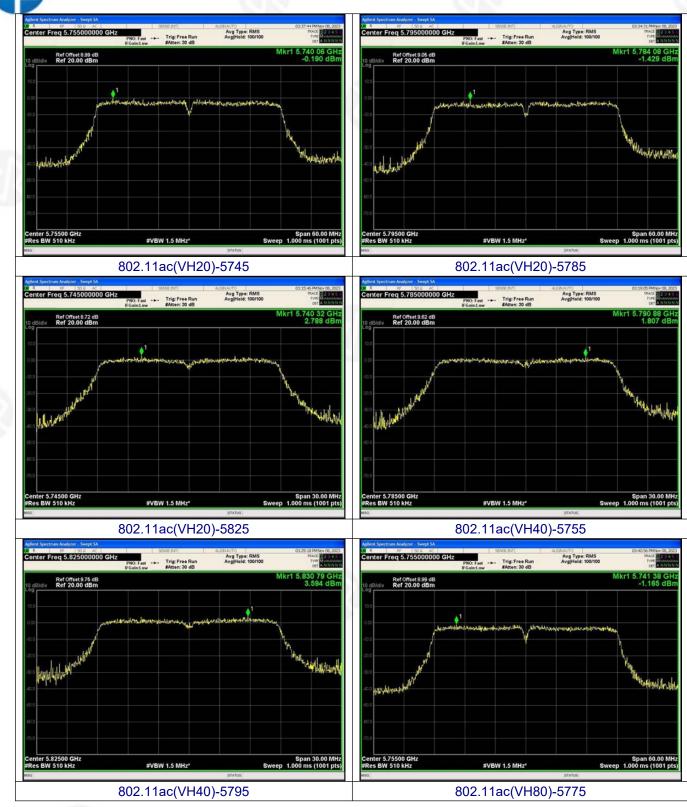


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#### Project No.: ZKT-2310248076E-3 Page 152 of 189







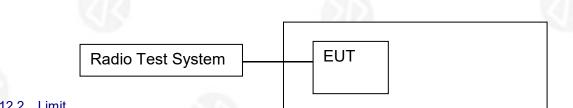






# **12. FREQUENCY STABILITY**

12.1 Block Diagram Of Test Setup



# 12.2 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

- 12.3 Test procedure
- 1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
- 2. Set EUT as normal operation.

3. Turn the EUT on and couple its output to spectrum.

4. Turn the EUT off and set the chamber to the highest temperature specified.

5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the

EUT and measure the operating frequency.

6. Repeat step with the temperature chamber set to the lowest temperature.







TX Frequency (5150-5250MHz) ANT1

Voltage vs. Frequency Stability

				Refe	rence Free	quency: 5	180MHz
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom		V nom (V)	120	5180.0925	5180	0.0925	17.8636
(°C)	20	V max (V)	132	5180.0444	5180	0.0444	8.5624
(0)		V min (V)	108	5180.1174	5180	0.1174	22.6697
	Li	mits			±2	20ppm	
	Result				Co	omplies	

# Temperature vs. Frequency Stability

				Reference Frequency: 5180MHz				
Ţ	TEST CO	NDITIONS	6	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
		T (°C)	0	5180.0133	5180	0.0133	2.5630	
V nom	Vinem	T (°C)	10	5180.0457	5180	0.0457	8.8263	
a search and a search a search a	120	T (°C)	20	5180.0016	5180	0.0016	0.3111	
(V)		T (°C)	30	5180.0520	5180	0.0520	10.0304	
		T (°C)	40	5180.0268	5180	0.0268	5.1654	
	Lir	nits		±20ppm				
	Re	sult			Co	mplies		







				Reference Frequency: 5200MHz				
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom		V nom (V)	120	5200.0452	5200	0.0452	8.7004	
T nom	20	V max (V)	132	5200.0223	5200	0.0223	4.2802	
(0)	(°C) V min (V) 108				5200	0.0062	1.2002	
	L	imits		±20ppm				
	Result				Co	omplies		
	К	esuit	24		C	omplies		

### Temperature vs. Frequency Stability

				Reference Frequency: 5200MHz					
Т	EST CO	NDITIONS	5	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
		T (°C)	0	5200.0019	5200	0.0019	0.3623		
V nom		T (°C)	10	5200.0210	5200	0.0210	4.0331		
(V)	120	T (°C)	20	5200.0354	5200	0.0354	6.8005		
(v)		T (°C)	30	5200.0120	5200	0.0120	2.3122		
		T (°C)	40	5200.0045	5200	0.0045	0.8656		
	Lin	nits	$\overline{\mathbf{A}}$		±2	20ppm			
	Re	sult			Co	mplies			



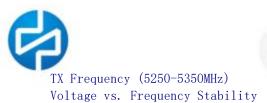
				Reference Frequency: 5240MHz				
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
T nom		V nom (V)	120	5240.0317	5240	0.0317	6.0541	
1996 (1997) (1997) (1997)	20	V max (V)	132	5240.0323	5240	0.0323	6.1672	
(°C)		V min (V)	108	5240.0216	5240	0.0216	4.1284	
	L	imits	-	±20ppm				
	Result				Co	omplies		
			10.000					

# Temperature vs. Frequency Stability

				Reference Frequency: 5240MHz					
ТІ	EST CO	NDITIONS	6	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
		T (°C)	0	5240.0497	5240	0.0497	9.4788		
Vnom		T (°C)	10	5240.0327	5240	0.0327	6.2400		
V nom	120	T (°C)	20	5240.0138	5240	0.0138	2.6372		
(V)		T (°C)	30	5240.0515	5240	0.0515	9.8369		
		T (°C)	40	5240.0326	5240	0.0326	6.2242		
	Lin	nits		±20ppm					
	Re	sult			Co	omplies			







	-			Reference Frequency: 5260MHz				
TE	TEST CONDITIONS				fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom		V nom (V) 12	C	5260.0079	5260	0.0079	1.4963	
T nom (°C)	20	V max (V) 132	2	5260.0307	5260	0.0307	5.8294	
(0)	( C) V min (V) 108				5260	0.0246	4.6700	
· · · · ·	Li	imits			±ź	20ppm		
	R	esult			Co	omplies		

Temperature vs. Frequency Stability

	>			Reference Frequency: 5260MHz					
Т	EST CO	NDITIONS	I f I fc I Deviation I				Max. Deviation (ppm)		
		T (°C)	0	5260.0209	5260	0.0209	3.9758		
V nom		T (°C)	10	5260.0000	5260	0.0000	0.0016		
A SAME AND A	120	T (°C)	20	5260.0088	5260	0.0088	1.6788		
(V)		T (°C)	30	5260.0503	5260	0.0503	9.5678		
		T (°C)	40	5260.0888	5260	0.0888	16.8774		
	Limits				±20ppm				
	Re	sult			Co	mplies			



			Reference Frequency: 5280MHz				
EST CO	ONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
	V nom (V)	120	5280.0193	5280	0.0193	3.6494	
20	V max (V)	132	5280.0422	5280	0.0422	7.9836	
	V min (V)	108	5280.0449	5280	0.0449	8.5120	
Li	mits	-		±	20ppm		
Result				Co	omplies		
	20 Li	20 V nom (V) V max (V) V min (V) Limits	20 V max (V) 132 V min (V) 108 Limits	EST CONDITIONS f 20 V nom (V) 120 5280.0193 V max (V) 132 5280.0422 V min (V) 108 5280.0449 Limits	EST CONDITIONS f fc   20 V nom (V) 120 5280.0193 5280   20 V max (V) 132 5280.0422 5280   V min (V) 108 5280.0449 5280   Limits ±2	EST CONDITIONS f fc Max. Deviation (MHz)   20 V nom (V) 120 5280.0193 5280 0.0193   20 V max (V) 132 5280.0422 5280 0.0422   V min (V) 108 5280.0449 5280 0.0449   Limits ±20ppm	

### Temperature vs. Frequency Stability

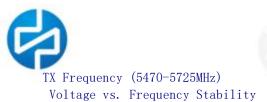
				Refer	Reference Frequency: 5280MHz					
Т	EST CO	NDITIONS	5	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)			
		T (°C)	0	5280.0878	5280	0.0878	16.6307			
V nom	Varan	T (°C)	10	5280.0176	5280	0.0176	3.3308			
	120	T (°C)	20	5280.0270	5280	0.0270	5.1060			
(V)		T (°C)	30	5280.0812	5280	0.0812	15.3764			
		T (°C)	40	5280.0581	5280	0.0581	10.9960			
	Limits				±20ppm					
	Re	sult			Co	mplies				



				Reference Frequency: 5320MHz				
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom		V nom (V)	120	5320.0862	5320	0.0862	16.2032	
T nom (°C)	20	V max (V)	132	5320.0058	5320	0.0058	1.0832	
(0)		V min (V)	108	5320.0746	5320	0.0746	14.0292	
	Li	mits			±	20ppm		
	Result				Co	omplies		

# Temperature vs. Frequency Stability

				Reference Frequency: 5320MHz					
т	EST CO	NDITIONS	6	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
		T (°C)	0	5320.0494	5320	0.0494	9.2819		
Vnom	14	T (°C)	10	5320.0153	5320	0.0153	2.8722		
V nom	120	T (°C)	20	5320.0678	5320	0.0678	12.7355		
(V)		T (°C)	30	5320.0697	5320	0.0697	13.0947		
		T (°C)	40	5320.0632	5320	0.0632	11.8830		
	Lin	nits		±20ppm					
	Re	sult		Complies					



				Reference Frequency: 5500MHz				
TE	TEST CONDITIONS				fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom		V nom (V)	120	5550.0390	5500	50.0390	9097.9924	
T nom	20	V max (V)	132	5550.0378	5500	50.0378	9097.7741	
(°C)		V min (V)	108	5550.0912	5500	50.0912	9107.4821	
	Li	mits		±20ppm				
	Re	esult		Complies				

Temperature vs. Frequency Stability

				Refer	rence Fred	quency: 5	500MHz
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
		T (°C)	0	5500.0327	5500	0.0327	5.9393
Vnom	Vinem	T (°C)	10	5500.0521	5500	0.0521	9.4696
V nom	120	T (°C)	20	5500.0759	5500	0.0759	13.8027
(V)		T (°C)	30	5500.0565	5500	0.0565	10.2677
		T (°C)	40	5500.0827	5500	0.0827	15.0421
	Limits			±20ppm			
	Re	sult		Complies			

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			Reference Frequency: 5580MHz				
ST CO	ONDITIONS		f	fc	(MHz) (ppm)		
	V nom (V)	120	5580.0274	5580	0.0274	4.9019	
20	V max (V)	132	5580.0470	5580	0.0470	8.4283	
	V min (V)	108	5580.0327	5580	0.0327	5.8627	
Li	mits	1	±20ppm				
R	esult	5		Co	omplies		
	20 Li	V nom (V) 20 V max (V)	20 V max (V) 132 V min (V) 108 Limits	V nom (V)   120   5580.0274     20   V max (V)   132   5580.0470     V min (V)   108   5580.0327     Limits   Imits   Imits	t   f   fc     20   V nom (V)   120   5580.0274   5580     20   V max (V)   132   5580.0470   5580     V min (V)   108   5580.0327   5580     Limits   ±2   ±2	ST CONDITIONS   f   fc   Deviation (MHz)     20   V nom (V)   120   5580.0274   5580   0.0274     20   V max (V)   132   5580.0470   5580   0.0470     V min (V)   108   5580.0327   5580   0.0327     Limits   ±20ppm	

#### Temperature vs. Frequency Stability

				Refer	rence Free	quency: 5	580MHz	
Т	EST CO	NDITIONS	5	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
		T (°C)	0	5580.0342	5580	0.0342	6.1317	
V nom	Vinom	T (°C)	10	5580.0198	5580	0.0198	3.5397	
	120	T (°C)	20	5580.0367	5580	0.0367	6.5794	
(V)		T (°C)	30	5580.0833	5580	0.0833	14.9342	
		T (°C)	40	5580.0542	5580	0.0542	9.7065	
	Limits				±20ppm			
	Re	sult		Complies				

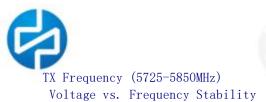




T CONDITIONS	6	f	fc	Max.	Max. Deviation	
			10	Deviation (MHz)	(ppm)	
V nom (V)	120	5700.0518	5700	0.0518	9.0840	
20 V max (V)	132	5700.0183	5700	0.0183	3.2188	
V min (V)	108	5700.0128	5700	0.0128	2.2500	
Limits		±20ppm				
Result	5		Co	omplies		
2	0 V max (V) V min (V) Limits	0 V max (V) 132 V min (V) 108 Limits	0 V max (V) 132 5700.0183 V min (V) 108 5700.0128 Limits	V max (V)   132   5700.0183   5700     V min (V)   108   5700.0128   5700     Limits   ±   ±   ±	V max (V)   132   5700.0183   5700   0.0183     V min (V)   108   5700.0128   5700   0.0128     Limits   ±20ppm	

# Temperature vs. Frequency Stability

				Refer	ence Free	quency: 5	700MHz
Т	EST CO	NDITIONS	6	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
		T (°C)	0	5700.0302	5700	0.0302	5.3063
V nom		T (°C)	10	5700.0117	5700	0.0117	2.0540
	120	T (°C)	20	5700.0012	5700	0.0012	0.2139
(V)		T (°C)	30	5700.0221	5700	0.0221	3.8748
		T (°C)	40	5700.0097	5700	0.0097	1.6987
	Lin	nits		±20ppm			
	Re	sult		Complies			



				Reference Frequency: 5745MHz				
TE	TEST CONDITIONS				fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom		V nom (V) 12	0	5745.0905	5745	0.0905	15.7564	
	20	V max (V) 13	2	5745.0000	5745	0.0000	0.0031	
(°C)		V min (V) 10	8	5745.0905	5745	0.0905	15.7564	
	Li	imits		±20ppm				
	R	esult		Complies				

Temperature vs. Frequency Stability

	>			Refer	Reference Frequency: 5745MHz				
т	TEST CONDITIONS				fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
		T (°C)	0	5745.0603	5745	0.0603	10.4992		
V nom	Vinem	T (°C)	10	5745.0365	5745	0.0365	6.3464		
AND STREET	120	T (°C)	20	5745.0543	5745	0.0543	9.4598		
(V)		T (°C)	30	5745.0589	5745	0.0589	10.2488		
		T (°C)	40	5745.0802	5745	0.0802	13.9548		
	Limits			±20ppm					
	Re	sult		Complies					



			Reference Frequency: 5785MHz				
EST CO	ONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
	V nom (V)	120	5785.0077	5785	0.0077	1.3287	
20	V max (V)	132	5785.0427	5785	0.0427	7.3815	
	V min (V)	108	5785.0312	5785	0.0312	5.3969	
Li	mits			±	20ppm		
Result				Complies			
	20 Li	20 V nom (V) V max (V) V min (V) Limits	20 V max (V) 132 V min (V) 108 Limits	EST CONDITIONS f 20 V nom (V) 120 5785.0077 V max (V) 132 5785.0427 V min (V) 108 5785.0312 Limits	EST CONDITIONS f fc   20 V nom (V) 120 5785.0077 5785   20 V max (V) 132 5785.0427 5785   V min (V) 108 5785.0312 5785   Limits ±	EST CONDITIONS   f   fc   Max. Deviation (MHz)     20   V nom (V)   120   5785.0077   5785   0.0077     20   V max (V)   132   5785.0427   5785   0.0427     V min (V)   108   5785.0312   5785   0.0312     Limits	

#### Temperature vs. Frequency Stability

				Refer	ence Free	quency: 5	785MHz	
Т	EST CO	NDITIONS	5	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
		T (°C)	0	5785.0152	5785	0.0152	2.6224	
V nom	Manana	T (°C)	10	5785.0299	5785	0.0299	5.1722	
	120	T (°C)	20	5785.0060	5785	0.0060	1.0346	
(V)		T (°C)	30	5785.0747	5785	0.0747	12.9206	
		T (°C)	40	5785.0447	5785	0.0447	7.7322	
	Limits				±20ppm			
	Re	sult		Complies				

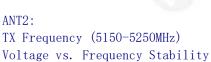
Voltage vs. Frequency Stability





				Refe	rence Free	quency: 5	825MHz	
TE	EST CO	ONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom	11	V nom (V)	120	5825.0124	5825	0.0124	2.1254	
T nom	20	V max (V)	132	5825.0683	5825	0.0683	11.7189	
(°C)		V min (V)	108	5825.0296	5825	0.0296	5.0780	
	L	imits		±20ppm				
	R	esult		Complies				

				Refer	Reference Frequency: 5825MHz				
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
3		T (°C)	0	5825.0072	5825	0.0072	1.2426		
Manana		T (°C)	10	5825.0686	5825	0.0686	11.7750		
V nom	120	T (°C)	20	5825.0779	5825	0.0779	13.3768		
(V)		T (°C)	30	5825.0709	5825	0.0709	12.1666		
		T (°C)	40	5825.0385	5825	0.0385	6.6037		
	Lir	nits		±20ppm					
	Re	sult	2	Complies					
						1.00			



				Reference Frequency: 5180MHz				
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Turan		V nom (V)	120	5180.0226	5180	0.0226	4.3658	
⊤ nom (°C)	20	V max (V)	132	5180.0075	5180	0.0075	1.4496	
		V min (V)	108	5180.0913	5180	0.0913	17.6185	
Limits				±20ppm				
Result				Complies				
and the second		0.111		-				

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	AND			Reference Frequency: 5180MHz					
Т	EST CO	NDITIONS	6	fR	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
	1 120	T (°C)	0	5180.0913	5180	0.0913	17.6266		
Vnom		T (°C)	10	5180.0452	5180	0.0452	8.7233		
V nom		T (°C)	20	5180.0161	5180	0.0161	3.1099		
(V)		T (°C)	30	5180.0086	5180	0.0086	1.6601		
		T (°C)	40	5180.0143	5180	0.0143	2.7697		
	Limits				±20ppm				
	Re	sult		Complies					





			Reference Frequency: 5200MHz								
EST CO	ONDITIONS		f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)					
	V nom (V)	120	5200.0109	5200	0.0109	2.0926					
20	V max (V)	132	5200.0464	5200	0.0464	8.9203					
							V min (V)	108	5200.0740	5200	0.0740
Limits				±20ppm							
Result				Co	Complies						
	20 Li	20 V nom (V) V max (V) V min (V) Limits	20 V max (V) 132 V min (V) 108 Limits	EST CONDITIONS f 20 V nom (V) 120 5200.0109 V max (V) 132 5200.0464 V min (V) 108 5200.0740 Limits	EST CONDITIONS f fc   20 V nom (V) 120 5200.0109 5200   V max (V) 132 5200.0464 5200   V min (V) 108 5200.0740 5200   Limits ±	EST CONDITIONS f fc Max. Deviation (MHz)   20 V nom (V) 120 5200.0109 5200 0.0109   20 V max (V) 132 5200.0464 5200 0.0464   V min (V) 108 5200.0740 5200 0.0740   Limits					

### Temperature vs. Frequency Stability

				Reference Frequency: 5200MHz					
Т	EST CO	NDITIONS	6	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
		T (°C)	0	5200.0809	5200	0.0809	15.5493		
Vnom	120	T (°C)	10	5200.0621	5200	0.0621	11.9488		
V nom		T (°C)	20	5200.0028	5200	0.0028	0.5458		
(V)		T (°C)	30	5200.0228	5200	0.0228	4.3839		
		T (°C)	40	5200.0644	5200	0.0644	12.3889		
	Limits				±20ppm				
	Re	sult		Complies					

Voltage vs. Frequency Stability







				Reference Frequency: 5240MHz				
TE	EST CO	ONDITIONS	5	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom	20	V nom (V)	120	5240.0139	5240	0.0139	2.6616	
T nom		V max (V)	132	5240.0800	5240	0.0800	15.2707	
(°C)		V min (V)	108	5240.0728	5240	0.0728	13.8947	
Limits				±20ppm				
	R	esult		Complies				

				Reference Frequency: 5240MHz					
TE	EST CO	NDITIONS	6	f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)		
3	120	T (°C)	0	5240.0276	5240	0.0276	5.2706		
V nom		T (°C)	10	5240.0552	5240	0.0552	10.5387		
		T (°C)	20	5240.0842	5240	0.0842	16.0699		
(V)		T (°C)	30	5240.0386	5240	0.0386	7.3718		
		T (°C)	40	5240.0537	5240	0.0537	10.2476		
	Limits				±20ppm				
	Result				Complies				
						1.02			







				Reference Frequency: 5260MHz				
TEST CONDITIONS				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)	
Tnom	20	V nom (V)	120	5260.0240	5260	0.0240	4.5589	
T nom		V max (V)	132	5260.0897	5260	0.0897	17.0441	
(°C)		V min (V)	108	5260.0232	5260	0.0232	4.4085	
Limits				±20ppm				
Result				Complies				

			Reference Frequency: 5260MHz					
EST CO	NDITIONS	6	f	fC	Max. Deviation (MHz)	Max. Deviation (ppm)		
	T (°C)	0	5260.0481	5260	0.0481	9.1454		
120	T (°C)	10	5260.0020	5260	0.0020	0.3839		
	T (°C)	20	5260.0441	5260	0.0441	8.3780		
	T (°C)	30	5260.0380	5260	0.0380	7.2247		
	T (°C)	40	5260.0521	5260	0.0521	9.9103		
Limits				±20ppm				
Result				Complies				
	120 Lir	T (°C)     T (°C)     120     T (°C)     T (°C)     T (°C)     T (°C)     T (°C)     Limits	T (°C)   10     120   T (°C)   20     T (°C)   30     T (°C)   40     Limits	T (°C)   0   5260.0481     T (°C)   10   5260.0020     120   T (°C)   20   5260.00441     T (°C)   30   5260.0380     T (°C)   40   5260.0521     Limits   I   I	T (°C)   0   5260.0481   5260     120   T (°C)   10   5260.0020   5260     120   T (°C)   20   5260.0441   5260     120   T (°C)   30   5260.0380   5260     T (°C)   40   5260.0521   5260     Limits   ±2   ±2	T (°C)   0   5260.0481   5260   0.0481     T (°C)   10   5260.0481   5260   0.0481     T (°C)   10   5260.0020   5260   0.0020     T (°C)   20   5260.0441   5260   0.0020     T (°C)   30   5260.0380   5260   0.0380     T (°C)   40   5260.0521   5260   0.0521     Limits   ±20ppm		