

Messrs: Digi-Key

Preliminary Specification

※In the case of specification change, KKC Part Number also will change.

Customer part number	-
Customer specification Number	-
Product	Quartz Crystal
Model	CX2520DB
Frequency	24576kHz
KKC Part Number	CX2520DB24576H0HZQA1

Pb Free, RoHS Compliant

MSL 1

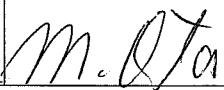
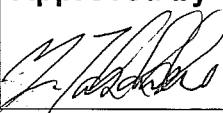
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Sales office

KYOCERA Corporation
 (Electronic Components Sales Division)
 Head Office 6 Takeda Tobadono-cho, Fushimi-ku,
 Kyoto 612-8501 Japan
 TEL 075-604-3500
 FAX 075-604-3501

Production

KYOCERA KINSEKI Corporation
 (Crystal Unit Sales Promotion Division)
 1-8-1, Izumi-honcho, Komae-Shi,
 Tokyo 201-8648 Japan
 TEL 03-5497-3111
 FAX 03-5497-3209

Design KYOCERA KINSEKI Yamagata Co. Crystal Units Division 1	Issued by 	Approved by 
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※Recycled paper is being used for the conservation of nature.

Date: 2011/ 3/ 3

Change History

Rev	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
0	Preliminary spec release	2011/ 3/ 3	<i>M. Ito</i>		<i>[Signature]</i>

1. APPLICATION

This specification sheet is applied to quartz crystal "CX2520DB".

2. KKC PART NUMBER

CX2520DB24576H0HZQA1

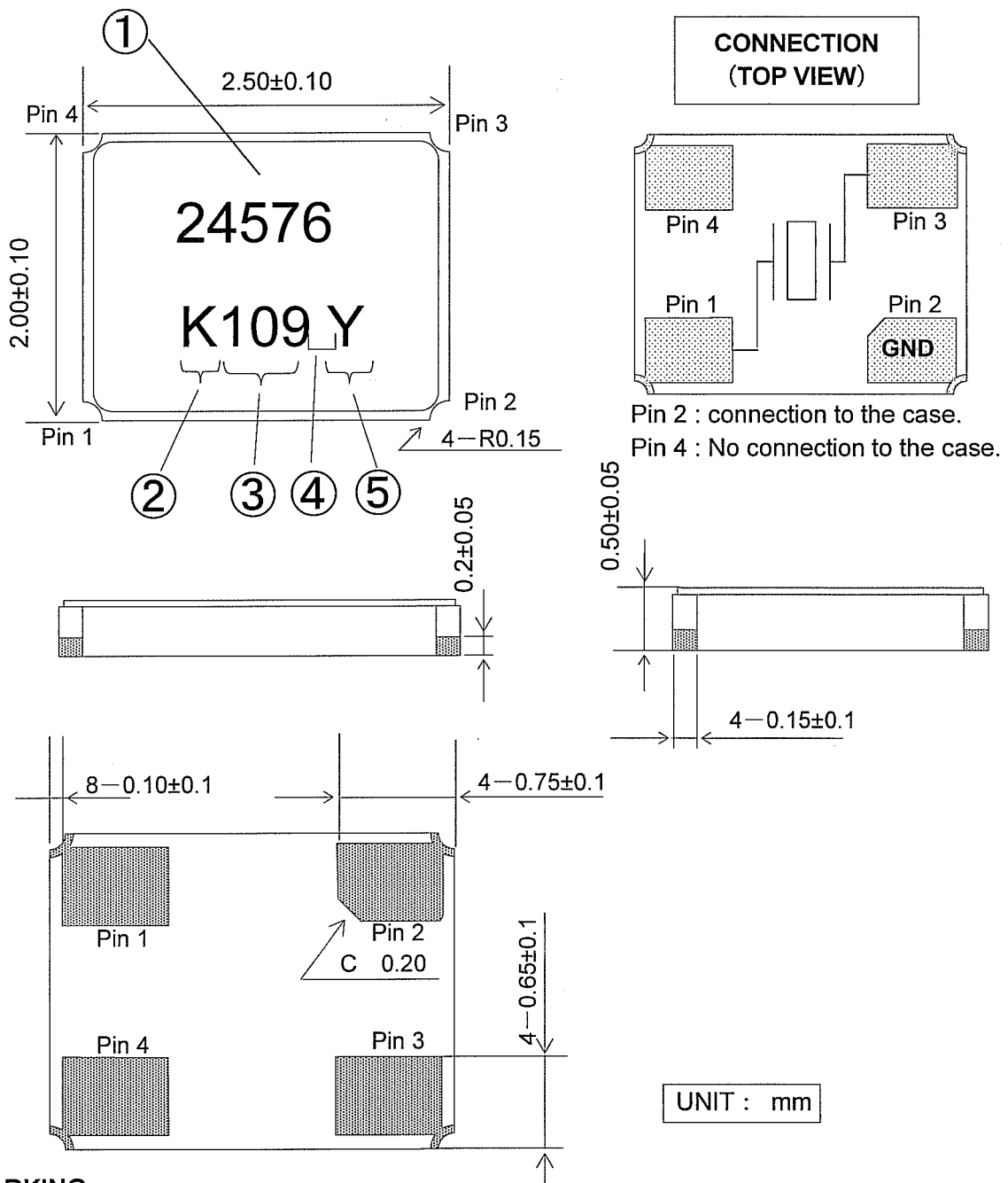
3. RATINGS

Items	SYMB.	Rating	Unit	Remarks
Operating Temperature	Topr	-20~+85	°C	
Storage Temperature range	Tstg	-40~+85	°C	

4. CHARACTERISTICS**ELECTRICAL CHARACTERISTICS**

Items	Electrical Specification					Test Condition	Remarks
	SYMB	Min	Typ.	Max	Unit		
Mode of Vibration		Fundamental					
Nominal Frequency	F0		24.576		MHz		
Nominal Temperature	T _{NOM}		+25		°C		
Load Capacitance	CL		12.0		pF		
Frequency Tolerance	df/F	-20.0		+20.0	PPM	+25±3°C Network Analyzer E5100A 200 μA	
Frequency Temperature characteristics	df/F	-30.0		+30.0		-20~+85°C	+25±3°C
Frequency Ageing Rate		-1.0		+1.0		1 year	+25±3°C
Equivalent Series Resistance	ESR			80	Ω	Network Analyzer E5100A 200 μA	
Drive Level	Pd	0.01		100	μW		
Insulation Resistance	IR	500			MΩ	100V(DC)	

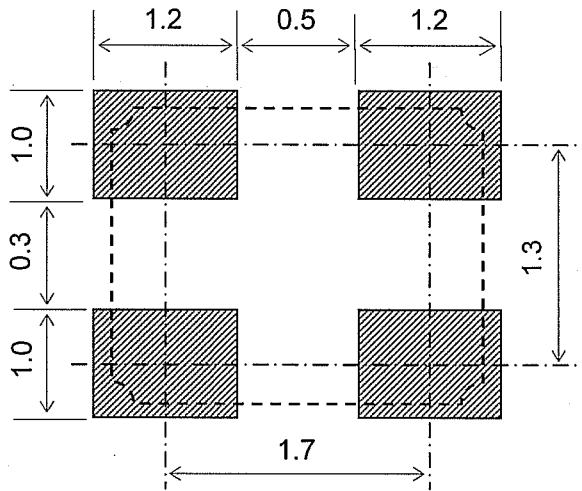
5. APPEARANCES, PHYSICAL DIMENSION OUTLINE DIMENSION (not to scale)



MARKING

- ① Nominal Frequency Move the number of maximum indication beams of the frequency to five digits, and omit less than kHz.
- ② Identification
- ③ Date Code Year...LAST 1 DIGIT of YEAR AND WEEK ※For details to P11
(Ex)March 3, 2011 → 109
- ④ Space(Direct Sealing)
- ⑤ Manufacturing Location
Y...Yamagata
Z...Shiga Yohkaichi
※The font of marking is reference.

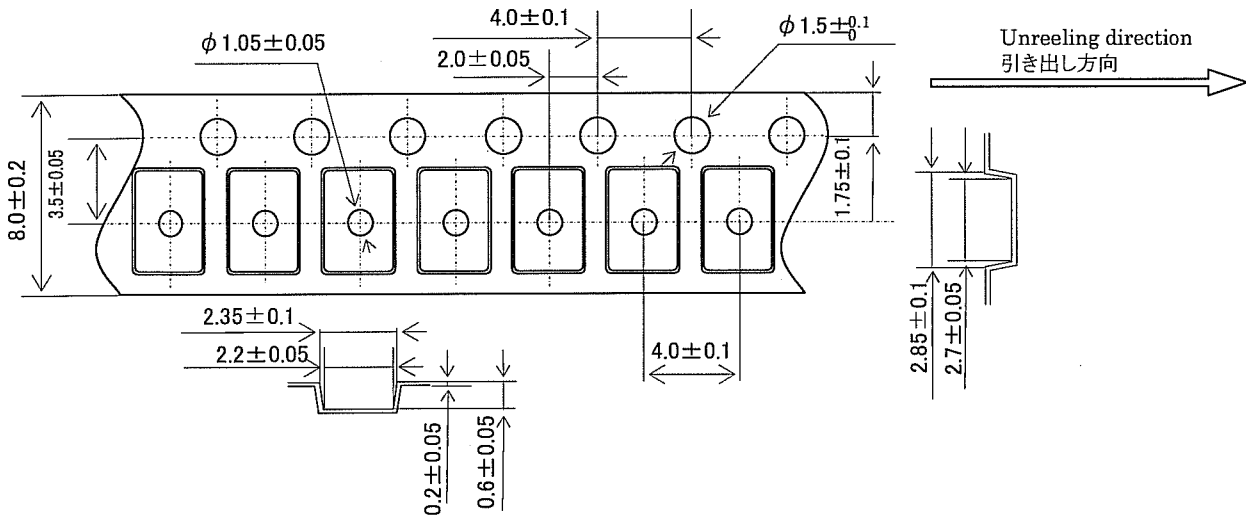
6. RECOMMENDED LAND PATTERN (not to scale)



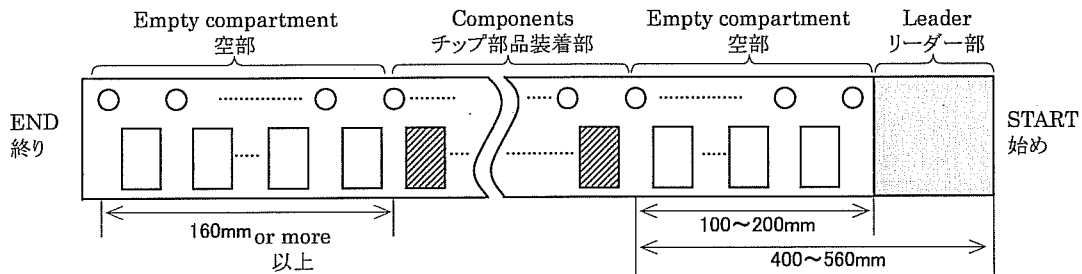
UNIT : mm

7.TAPING&REEL 梱包補助材

7-1.Dimensions (寸法図)



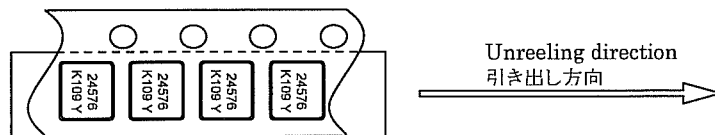
7-2.Leader and trailer tape (リーダー部テープ部及び終末端部テープ)



7-3.Direction (The direction shall be seen from the top cover tape side)

テーピング方向

(トップカバーテープ側から見る。)



7-4.Specification (記事)

1.Material of the carrier tape shall be EC-AP, Polycarbonate, A-PET or PS(all ESD).

{装着テープの材質は、EC-AP、ポリカーボネイト、A-PET、PS (全て静電対策品) の何れかとする。}

2.Material of the seal tape shall be polyester(ESD).{シールテープの材質はポリエステルとする。(静電対策品)}

3.The seal tape shall not cover the sprocket holes. And not protrude from the carrier tape.

{シールテープは送り穴をふさいだり、装着テープからはみ出していないこと。}

4.Tensile strength of the tape: 10N or more. {テープの引張り強度は10N以上}

5.The R of the corner without designation is 0.2RMAX. {指定無きコーナーのRは0.2RMAX}

6.Disalignment between centers of the cavity and sprocket hole shall be 0.05mm or less. {角穴の中心と送り穴の中心とのずれは、0.05mm以下とする。}

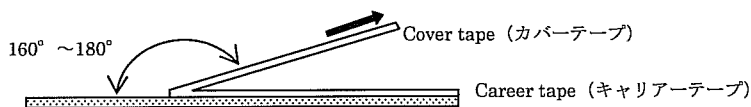
7.Cumulative pitch tolerance of "P₀" shall be ± 0.2 mm at 10 pitches. {"P₀"の累積ピッチ許容差は、10ピッチで ± 0.2 mmとする。}

8.Keep direction of a printing at tape inside. {エンボステープ内における印字は上図の方向とする。}

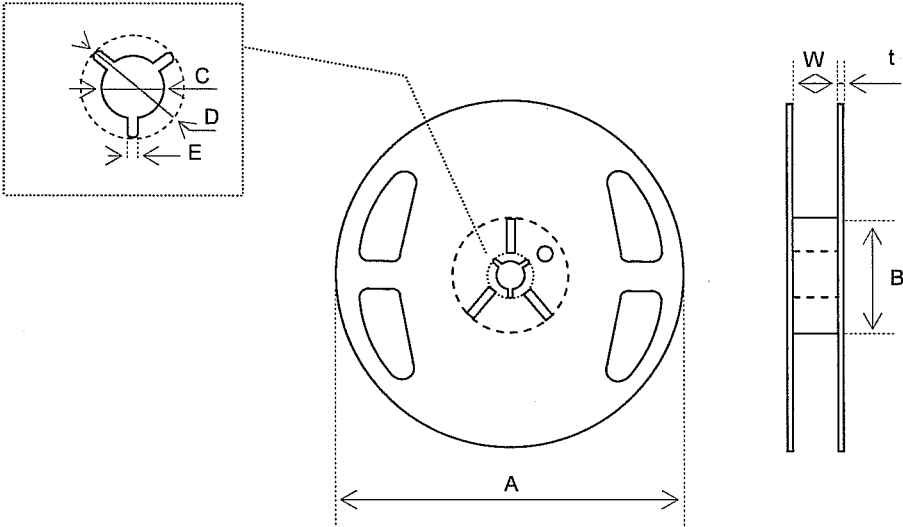
9. Peeling force of the seal tape: 0.1 to 0.7N. {シールテープ剥離強度 0.1~0.7N}

10.The component can fall headlong naturally from taping in she environment, such dry conditions, when this components were transferred to, cover was removed and the component was moved upside down.

カバーテープを外しテープを逆にしたとき、輸送後及び乾燥等の環境下でも自重で部品が落下できる。



Reel specifications リール



In the case of $\Phi 180$ Reel (1000 or 3000 pcs)

Symbol	A	B	C	D
Dimension	$\phi 180 +0/-3$	$\phi 60 +1/-0$	$\phi 13 \pm 0.2$	$\phi 21 \pm 0.8$
Symbol	E	W	t	
Dimension	2.0 ± 0.5	9 ± 1	2.0 ± 0.5	

(Unit : mm)

In the case of $\Phi 330$ Reel (1000 or 3000 or 5000 pcs)

Symbol	A	B	C	D
Dimension	$\phi 330 \pm 0.2$	$\phi 100 \pm 1.0$	$\phi 13 \pm 0.2$	$\phi 21 \pm 0.8$
Symbol	E	W	t	
Dimension	2.0 ± 0.5	13.5 ± 0.5	2.2 ± 0.1	

(Unit : mm)

8.Environmental requirements

After following test, frequency shall not change more than $\pm 20 \times 10^{-6}$

And CI, $\pm 20\%$ or 5Ω of large value.

- 8.1 Resistance to Shock Test condition
Natural dropped from height 100cm onto hard wood board in 3 times
- 8.2 Resistance to Vibration Test condition
frequency : 10 - 55 - 10 Hz
Amplitude : 1.5mm
Cycle time : 15 minutes
Direction : X,Y,Z (3direction),2 h each.
- 8.3 Resistance to Heat Test condition
The quartz crystal unit shall be stored at a temperature of $+85 \pm 2^\circ\text{C}$ for 500 h.
Then it shall be subjected to standard atmospheric conditions for 1 h ,after which measurement shall be made.
- 8.4 Resistance to Cold Test condition
The quartz crystal unit shall be stored at a temperature of $-40 \pm 2^\circ\text{C}$ for 500 h.
Then it shall be subjected to standard atmospheric conditions for 1 h ,after which measurement shall be made.
- 8.5 Thermal Shock Test condition
The quartz crystal unit shall be subjected to 500 successive change of temperature cycles , each as shown in table below, Then it shall be subjected to standard atmospheric conditions for 1h, after which measurements shall be made.
Cycle : $-40 \pm 2^\circ\text{C}$ (30min.) $\sim +25 \pm 2^\circ\text{C}$ (5min.)
 : $+85 \pm 2^\circ\text{C}$ (30min.) $\sim +25 \pm 2^\circ\text{C}$ (5min.)

8.6 Resistance to Moisture

Test condition

The quartz crystal unit shall be stored at a temperature of $+60 \pm 2^\circ\text{C}$ with relative humidity of 90% to 95% for 240 h. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurements shall be made

8.7 Soldering condition

1.) Material of solder

Kind ... lead free solder paste

Melting point ... $+220 \pm 5^\circ\text{C}$

2.) Temp.profile of reflow soldering system

	Temp [$^\circ\text{C}$]	Time[sec]
Peak	$+260 \pm 5$	10 (max.)
Preheating	$+180$ (typ.)	100 (typ.)
Total	—	200 (max.)

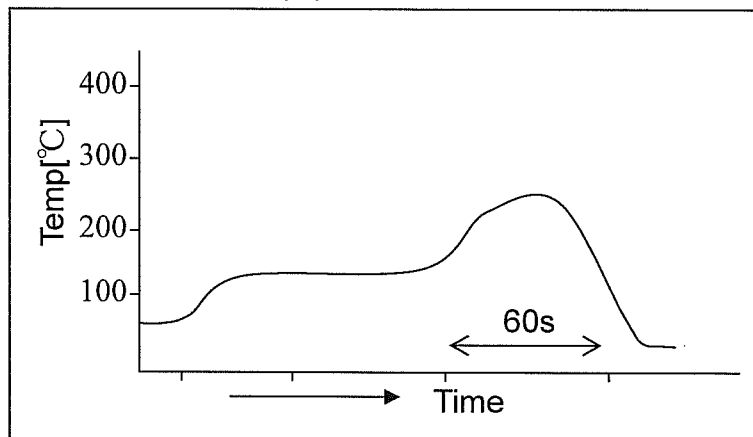
Reflow times : 2times

Frequency shift : $\pm 2\text{ppm}$

3.) Hand Soldering

$+35^\circ\text{C}$ 3 sec MAX

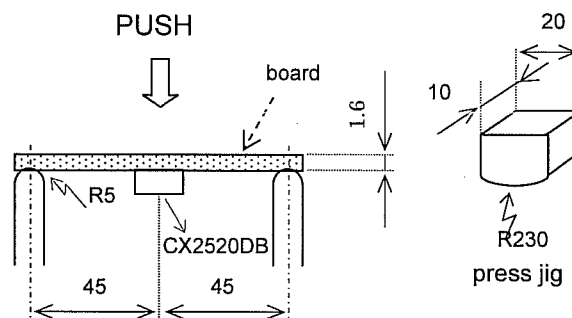
Temp. profile of reflow



8.8 Intensity for bending in circuit board

Solder this product in center of the circuit board of $40\text{mm} \times 100\text{mm}$, and add the deflection of 3mm as the bottom figure.

Test board : $t = 1.6\text{mm}$



UNIT : mm

9. Cautions for use

(1) Automatic mounting machine use

Please use after affirmation that select the mounting machine model with a shock small if possible in the case of use of an automatic mounting machine, and it does not have breakage. There is a risk of a crystal oscillating child's breakage occurring and not functioning normally by too much shock etc.

(2) Conformity of a circuit

In case of use of an oscillation circuit, please insert in a crystal oscillating child in series resistance 5 time as many as the standard value of equivalent in-series resistance, and confirm oscillating. Please remove resistance which inserted after the notes above-mentioned examination in the crystal oscillating child in series, and use it.

10. Storage conditions

Storage at prolonged high temperature or low temperature and the storage by high humidity cause degradation of frequency accuracy, and degradation of soldering nature. Storage is performed at the temperature of +18~+30°C, and the humidity of 20-70 Percent in the state of packing, and a term is 6 months.

11. Quality Assurance

Location

Kyocera Kinseki Yamagata Corporation ... Kyocera Kinseki Yamagata

Quality Assurance Division

Kyocera Kinseki Corporation Shiga Yohkaichi Plant ... Kyocera Kinseki

Quality Assurance Division

12. Quality guarantee

When the failure by the responsibility of our company occurs clearly after delivery within 1 year, a substitute article etc. is appropriated gratuitously and this is guaranteed. However, when passing 1 year after delivery, there is a case where I am allowed to consider as onerous repair after both consultation.

13. Others

When any questions and opinions are in the written matter of these delivery specifications, I will ask connection of you from the our company issue day within 45 days. In a connection no case, a written matter is consented to it and employed within a term.

Date: 2011/ 3/ 3

14.LOT CALENDAR

WEEK	MONTH	MON	TUE	WED	THU	FRI	SAT	SUN		WEEK	MONTH	MON	TUE	WED	THU	FRI	SAT	SUN
週	月	月	火	水	木	金	土	日		週	月	月	火	水	木	金	土	日
1053	1						1	2		1127	7	4	5	6	7	8	9	10
1101		3	4	5	6	7	8	9		1128		11	12	13	14	15	16	17
1102		10	11	12	13	14	15	16		1129		18	19	20	21	22	23	24
1103		17	18	19	20	21	22	23		1130		25	26	27	28	29	30	31
1104		24	25	26	27	28	29	30		1131	8	1	2	3	4	5	6	7
1105	2	31	1	2	3	4	5	6		1132		8	9	10	11	12	13	14
1106		7	8	9	10	11	12	13		1133		15	16	17	18	19	20	21
1107		14	15	16	17	18	19	20		1134		22	23	24	25	26	27	28
1108		21	22	23	24	25	26	27		1135	9	29	30	31	1	2	3	4
1109	3	28	1	2	3	4	5	6		1136		5	6	7	8	9	10	11
1110		7	8	9	10	11	12	13		1137		12	13	14	15	16	17	18
1111		14	15	16	17	18	19	20		1138		19	20	21	22	23	24	25
1112		21	22	23	24	25	26	27		1139	10	26	27	28	29	30	1	2
1113	4	28	29	30	31	1	2	3		1140		3	4	5	6	7	8	9
1114		4	5	6	7	8	9	10		1141		10	11	12	13	14	15	16
1115		11	12	13	14	15	16	17		1142		17	18	19	20	21	22	23
1116		18	19	20	21	22	23	24		1143		24	25	26	27	28	29	30
1117	5	25	26	27	28	29	30	1		1144	11	31	1	2	3	4	5	6
1118		2	3	4	5	6	7	8		1145		7	8	9	10	11	12	13
1119		9	10	11	12	13	14	15		1146		14	15	16	17	18	19	20
1120		16	17	18	19	20	21	22		1147		21	22	23	24	25	26	27
1121		23	24	25	26	27	28	29		1148	12	28	29	30	1	2	3	4
1122	6	30	31	1	2	3	4	5		1149		5	6	7	8	9	10	11
1123		6	7	8	9	10	11	12		1150		12	13	14	15	16	17	18
1124		13	14	15	16	17	18	19		1151		19	20	21	22	23	24	25
1125		20	21	22	23	24	25	26		1152		26	27	28	29	30	31	
1126	7	27	28	29	30	1	2	3										