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Subject	QR-Code on QSL Cards		
Society	DARC	Country:	Germany
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QR-Code on QSL Cards

Introduction

Many radio amateurs still carry on the tradition of using a QSL card as a confirmation of a contact with another amateur station. In most member societies, the cards are sorted by hand. We like to show how an automated QSL sorting service can be done with less amount of manual work.

Background

DARC is sorting each year about 6 million QSL cards received for or sent by its members.

All incoming QSL cards are separated between foreign and domestic recipients. All QSL cards to be sent to foreign societies are sorted manually and send to their according bureau. All cards for DL amateurs go to a coding station, where staff needs to type the call sign of the recipient. If the recipient of the QSL card is a member of the DARC, a CMC7 (magnetic readable code) is printed on the QSL card and forwarded to the automatic sorting process. The CMC7 sensor in the sorting machine then detects the printed code and the QSL cards are automatically sorted by districts, local radio clubs and its members.

The manual coding needs a lot of work force. On many QSL cards the log data is already printed directly on card or on labels. By printing additionally a QR code directly on card or a label the manual handling of cards to get a magnetic readable code can be omitted.

For this, we'd like to introduce a QR code that will have the QSO (log) information stored.

Recommendation

It is recommended to discuss a suitable QR-coding to be printed on outgoing QSL cards to ease automatic sorting. An example of a possible code and its structure is shown in annex 1.

Annex 1

Example of a possible QR code structure

Appendix 1 QR code on QSL

Proposal for the introduction of the QR coding of QSL cards. Author Thomas Kalmeier, DG5MQ

Basics:

To use the QR code to store log data we recommend to use a 8 bit coding.

Recommendation:

To have the most flexibility we need the following agreement:

1. To use a 8 bit coding
2. The first two bytes describes the protocol version (0-65535)
3. The protocol description must be public on the IARU webpage

This will allow further developments and gives room for other possibilities

In the following tables we will describe the protocol version 0.

All fields can be filled but they are not a must. The minimum useful filling is the originator of the QSL card and the recipient of the QSL.

All other fields can be filled with log data.

Proposal protocol version 0

QR Code

Byte 1

Information of Field	Type of Filed
0 Source Call	CallAscii
1 Destination Call	CallAscii
2 Name Operator	Ascii
3 Call Operator	CallAscii
4 QTH	Ascii
5 QSL VIA	CallAscii
6 QSL Comment	Ascii
7 Locator	Ascii
8 Adress	Ascii
9	
15	
16 Source Call	CallAscii+Unicode
17 Destination Call	CallAscii+Unicode
18 Name Operator	Ascii+Unicode
19 Call Operator	CallAscii+Unicode
20 QTH	Ascii+Unicode
21 QSL VIA	CallAscii+Unicode
22 QSL Comment	Ascii+Unicode

23	Locator	Ascii+Unicode
24	Adress	Ascii+Unicode
25		
...		
127		
128	QSO1-Start-Time	Time
129	QSO1-End-Time	Time
130	QSO1-Band	Band
131	QSO1-QRG-HZ	QRG in HZ
132	OSO1-QRG-KHz	QRG in KHz
133	QSO1-QRG-MHz	QRG in MHz
134	QSO1-QRG-GHz	QRG GHz
135	QSO1-Power	Power
136	QSO1-TRX	Ascii
137	QSO1-Ant	Ascii
138	QSO1-RS-TX	RS
139	QSO1-RS-RX	RS
140	QSO1-Contest Number8 TX	Number8
141	QSO1-Contest Number8 RX	Number8
142	QSO1-Contest Number16 TX	Number8
143	QSO1-Contest Number16 RX	Number8
144		
145		
...		
151		
152	QSO2-Start-Time	Time
153	QSO2-End-Time	Time
154	QSO2-Band	Band
155	QSO2-QRG-HZ	QRG in HZ
156	OSO2-QRG-KHz	QRG in KHz
157	QSO2-QRG-MHz	QRG in MHz
158	QSO2-QRG-GHz	QRG GHz
159	QSO2-Power	Power
160	QSO2-TRX	Ascii
161	QSO2-Ant	Ascii
162	QSO2-RS-TX	RS
163	QSO2-RS-RX	RS
164	QSO2-Contest Number8 TX	Number8
165	QSO2-Contest Number8 RX	Number8
166	QSO2-Contest Number16 TX	Number8
167	QSO2-Contest Number16 RX	Number8
168		

And so on with other QSOs

Type of Filed	Description	Computer-Type	Data1	Data2	Data3	Data4	Data5	Data6	Data 7	Data 8
Call-Ascii	Station-Info+Text	unsigned char	length-1 (0-255)	Station-Info Bit0..6 000000=Home 000001=mobil 000010=Air-Mobil 000011=Maritim Mobil 000100=portable 000101= 000110= 000111= 001000= 111111=QSL Via	Text..n	Text..n	Text..n	Text..n	Text..n	
Call Ascii-Unicode	Station-Info+Text	unsigned char	length-1 (0-255)	Station-Info Bit0..6 000000=Home 000001=mobil 000010=Air-Mobil 000011=Maritim Mobil	Text..n MSB	Text..n LSB	Text..n MSB	Text..n LSB		

000100=portabe
|
000101=
000110=
000111=
001000=

Bit7
0=1 Way
1=2 Way

Ascii	Text	unsigned char	length-1 (0-255)	Text	Text..n	Text..n	Text..n	Text..n	Text..n	
Ascii+Unicode	Text	unsigned char	length-1 (0-255)	Text	Text..n MSB	Text..n LSB	Text..n MSB	Text..n LSB	Text..n MSB	Text..n LSB
Time	Unix-Time	long	long	long	long	long				
Band	Table of Band	unsigned char		0						
				1						
				2						
				3						
				4						
				5						
				6						
				7						

Power	TX Power in unsigned Watt *10 0,1Watt = 1 6000Watt = 60000	Int	Int
QRG	QRG Frequenz Faktor	unsigned int *	Int
Mode	Mode of QSO	unsigned Char	0=SSB 1=USB 2=LSB 3=RTTY 4=PSK31 5=HAMNE T 6=ATV 7 8 9 0
RS	RS-Signal	unsigned Char Bit0..2	Data 000=R1 001=R2

			010=R3
			011=R4
			100=R5
			101=spare
			110=spare
			111=spare
	Bit3..7		00000=S1
			00001=S2
			00010=S3
			00011=S4
			00100=S5
			00101=S6
			00110=S7
			00111=S8
			01000=S9
			01000=S9+
			10
			01001=S9+
			20
			01010=S9+
			30
			01011=S9+
			40
			01100=S9+
			50
			01101=S9+
			60
T+extention	T-Ton Quality	unsigned Char	Data
	Bit0..3		0000=T1

	0001=T2
	0010=T3
	0011=T4
	0100=T5
	0101=T6
	0110=T7
	0111=T8
	1000=T9
	1001=spare
	1010=spare
	1011=spare
	1100=spare
	1101=spare
	1110=spare
	1111=spare
Bit4..6	000=X
	001=C
	010=K
	011=A
	100=D
	101=spare
	110=spare
	111=spare

Number8	Number unsigned Byte
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Number 16	Number unsigned Int
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